

No. 10218

United States
Circuit Court of Appeals
For the Ninth Circuit.

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2357

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ULTRA-VIOLET PRODUCTS, INC., a corporation,

Petitioner,

vs.

FEDERAL TRADE COMMISSION,

Respondent.

—

Transcript of the Record

—

Upon Petition to Review and Set Aside Order of the
Federal Trade Commission

FILED

SEP - 8 1943

PAUL P. CEBIEN,

CLERK

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[Clerk's Note: When deemed likely to be of an important nature, errors or doubtful matters appearing in the original certified record are printed literally in italic; and, likewise, cancelled matter appearing in the original certified record is printed and cancelled herein accordingly. When possible, an omission from the text is indicated by printing in *italic* the two words between which the omission seems to occur.]

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United States of America
Before Federal Trade Commission

Docket No. 4407

In the Matter of

ULTRA-VIOLET PRODUCTS, INC., a corporation.

COMPLAINT

Pursuant to the provisions of the Federal Trade Commission Act, and by virtue of the authority vested in it by said Act, the Federal Trade Commission, having reason to believe that Ultra-Violet Products, Inc., a corporation, hereinafter referred to as respondent, has violated the provisions of said Act, and it appearing to the Commission that a proceeding by it in respect thereof would be in the public interest, hereby issues its complaint, stating its charges in that respect as follows:

Paragraph One: Respondent, Ultra - Violet Products, Inc., is a corporation organized, existing and doing business under and by virtue of the laws of the State of California, with its principal office and place of business located at 6158 Santa Monica Boulevard, in the City of Los Angeles, State of California. It is now, and for more than two years last past has been, engaged in the manufacture of a device designated as "Life Lite" and in the sale and distribution of such device in commerce between and among the various states of the United States and in the District of Columbia. Said device

is a quartz lamp of the so-called "cold" type, whereby a mercury arc is burned in quartz. It is sold, designed and intended for home use by the lay individual as an artificial means of obtaining the ultraviolet rays of natural sunlight, and for the alleged prevention, treatment and alleviation of various ailments, diseases and abnormal conditions of the human body. [1*]

Paragraph Two: Respondent, being engaged in business as aforesaid, causes and has caused its said device, "Life Lite", when sold, to be transported from its said place of business in the State of California to purchasers thereof located in states of the United States other than the State of California, and in the District of Columbia. Respondent maintains, and at all the times herein mentioned has maintained, a course of trade in said device in commerce between and among the various states of the United States and in the District of Columbia.

Paragraph Three: In the course and conduct of its aforesaid business, the respondent has disseminated and is now disseminating, and has caused and is now causing the dissemination of, false advertisements concerning its said product by the United States mails, and by various other means in commerce, as commerce is defined in the Federal Trade Commission Act; and respondent has also disseminated and is now disseminating and has caused and is now causing the dissemination of, false adver-

* Page numbering appearing at foot of page of original certified Transcript of Record.

tisements concerning its said product, by various means, for the purpose of inducing, and which are likely to induce, directly or indirectly, the purchase of its said product in commerce, as commerce is defined in the Federal Trade Commission Act. Among, and typical of, the false, misleading and deceptive statements and representations contained in said false advertisements, disseminated and caused to be disseminated, as hereinabove set forth, by the United States mails, by advertisements in newspapers and periodicals, and by other advertising literature, are the following:

“Life Lite ultra-violet rays clear up many of the chronic skin disorders which have failed to respond to other methods of treatment Most infections of the skin respond quickly to the germ killing effects of the rays. Furthermore, they stimulate the skin tissue to build a high degree of disease resistance.” [2]

“Ultra-Violet helps to set up a chemical reaction that keeps the blood stream in balance. It aids in overcoming a deficiency of either white or red blood corpuscles . . . As well as deficiencies of the red coloring matter that is so important as an oxygen carrying agent. Thus, this tonic effect on the blood not only builds direct resistance to infection but also stimulates the endocrine glands that are so vital to health.”

“The chemical action of ultra-violet rays soothes the nerve endings in the skin and alleviates many internal conditions. The anti-

acid or alkalizing effect of ultra-violet rays, plus their ability to increase the general resistance, help to correct many forms of illness."

Build Better Health with Life Lite . . . A full quota of sunlight whether obtained from natural or artificial sources means a better functioning of the human body. It helps build resistance against disease, improves metabolism and increases capacity for work or play."

"Many disorders of the catarrhal type, such as asthma, hay-fever, bronchitis, colds, sinus trouble, and discharge from the ears, are corrected more rapidly if daily treatment is given with the cold ultra-violet ray lamp."

"Many skin diseases, where fungi are present, such as barber's itch, ringworm, and impetigo, also disappear when the proper dosages of the rays are used . . . Great improvement in cases of athlete's foot will quickly be noted."

". . . In acne, eczema, psoriasis, shingles and erysipelas, ultra-violet can often be used with marked benefit. The ultra-violet rays destroy germs and also hasten the growth of new, clean tissue . . ." [3]

"Life Lite is indispensable for the home treatment of a great many skin diseases and for relieving many types of illness. It is without doubt the finest means of building up the general resistance, overcoming low vitality, and quickening convalescence of any known natural treatment."

"Patients with anemia should receive ultra-violet light treatments in addition to dietary changes. The light-ray applications have a tendency to increase both the hemoglobin and red corpuscles of the blood."

"You will find our quartz ultra-violet lamps to be the safest and most efficient on the market. The intensity is correctly regulated so that there is no danger of serious over-exposure."

"These rays are absolutely necessary to vigorous, normal existence as well as a powerful aid in healing disease. It has been shown that the ultra-violet rays are one of the main factors which produce improved tone, increased resistance and better mental reaction. They tone up the nervous system and induce restful sleep by a regulatory influence on the metabolism in all cases showing a calcium and phosphorus deficiency."

Quartz ultra-violet rays normalize body chemistry! Life Lite rebuilds your resistance to colds, increases vitality and heals most skin diseases."

"Skin Diseases, acne, eczema, psoriasis, sores, ulcers, infections, etc. Life Lite quartz ultra-violet lamps heal most skin diseases safely, quickly and easily at home." [4]

"Get your quota of sunlight with Life Lite . . . clear up most of your chronic skin disorders . . . build resistance against disease . . . and relieve pain. Sufferers from psoriasis,

acne, eczema, ulcers, and impetigo have obtained noticeable improvement after consistent use of Life Lite."

Paragraph Four: By the use of the above and similar representations not set out herein respondent has directly and by implication represented to the general public that its said device designated "Life Lite" is a sun lamp; that it is safe for use in the home for self-treatment without the supervision of a qualified physician; and that it will give benefits to the skin and to the general health of the individual comparable to that given by natural sunlight. Respondent has further represented to the general public, as aforesaid, that the use of said device provides a cure, remedy or competent and adequate treatment for chronic, infectious and bacterial skin diseases and ailments, as well as those of fungus origin, asthma, hay-fever, bronchitis, colds, sinus trouble, discharges from the ears, barber's itch, ringworm, impetigo, athlete's foot, acne, eczema, psoriasis, shingles, erysipelas, anemia, sores and ulcers, and that it will give relief in all of such conditions, diseases and ailments. Respondent has also represented to the general public, as aforesaid, that the use of said device stimulates the tissues of the skin; that it builds up in the body resistance to disease; that it produces a chemical reaction that keeps the blood stream in balance; that it aids in overcoming a deficiency of either white or red corpuscles; that it produces a tonic effect upon the blood; that it builds up the body's resistance to

infection; that it stimulates the endocrine glands; that it quiets and soothes the nerves, especially the nerve endings in the skin; that it acts as an anti-acid and has an alkalizing effect upon the body; that it improves metabolism; that it makes the body strong, increases vitality, and builds new tissue; that it improves the general tone of the body and improves mental reactions; that it tones up the nervous system and induces sleep; that it normalizes body chemistry and that it relieves pain. [5]

Paragraph Five: Ultraviolet rays are measured in angstrom units. The ultraviolet rays emitted from natural sunlight range in wave lengths from 2800 to 3150 angstrom units. A lamp which emits ultraviolet rays within this range is properly understood and designated by members of the medical profession generally as a sun lamp. Lamps which emit ultraviolet rays of less than 2800 angstrom units are considered by the medical profession generally as therapeutic lamps rather than as sun lamps for the reason that the rays emitted therefrom possess bactericidal properties and are not comparable to the rays emitted by natural sunlight. Such therapeutic lamps are not suitable for the same type of uses as are sun lamps and are not suitable for home use for therapeutic purposes without the supervision of a trained and skilled operator because of the danger of overexposure and severe burns. Respondent's lamp is in the category of therapeutic lamps by reason of its emission of ultraviolet rays of approximately 2540 angstrom units.

Respondent's device will not give benefits to the

skin and to the general health of the individual comparable to that given by natural sunlight for the reason that the ultraviolet rays emitted therefrom are not, in turn, comparable to the ultraviolet rays emitted by natural sunlight. The therapeutic value of respondent's device is limited to the possible destruction of bacteria when present on the surface of the skin and it would be of no value in the treatment of chronic infections, asthma, hay-fever, bronchitis, colds, sinus trouble, discharges from the ears, barber's itch, ringworm, impetigo, athlete's foot, acne, eczema, psoriasis, shingles, erysipelas, anemia, sores or ulcers. Said device has little or no value in the treatment of bacterial skin disease or those of fungus origin because of its inability to penetrate the layers of the skin to reach such germs or organisms which are not found generally on the surface of the skin. Furthermore, the use of said device will not stimulate the tissues in the skin or build up resistance in the body against disease. Said device will not produce a chemical reaction in the body, keep the blood stream in balance, or aid in overcoming a deficiency of the white or red blood corpuscles, nor does it produce a tonic effect on the blood. It does not build up the body's resistance against infection, stimulate the endocrine glands or quiet and soothe the nerves or the nerve endings in the skin. Said device does [6] not act as an anti-acid or have an alkalizing effect upon the body. The use of said device does not result in an improvement in the process of metabolism nor does it make the body strong or increase vitality or build new

tissue. It does not improve the general tone of the body or improve mental reactions. The use of said device does not tone up the nervous system, induce sleep, normalize the body chemistry, or relieve pain.

Paragraph Six: In addition to the false and misleading statements hereinabove set forth, the respondent is also engaged in the dissemination of false advertisements as aforesaid in that said advertisements fail to reveal facts material in the light of the representations contained therein and fail to reveal that the unsupervised use of respondent's device for therapeutic purposes by persons not trained in the operation of such device and not skilled in the diagnosis, analysis and methods of treatment of diseases may result in severe burns and other serious and irreparable injury to health.

Paragraph Seven: The use by the respondent of the foregoing false, deceptive and misleading statements, representations and advertisements disseminated as aforesaid with respect to the therapeutic value of its said device has had and now has the capacity and tendency to and does mislead and deceive a substantial portion of the purchasing public into the erroneous and mistaken belief that such false statements, representations and advertisements are true and induces a portion of the purchasing public because of such erroneous and mistaken belief to purchase said device.

Paragraph Eight: The aforesaid acts and practices of the respondent as herein alleged are all to the prejudice and injury of the public and constitute unfair and deceptive acts and practices in com-

merce within the intent and meaning of the Federal Trade Commission Act.

Wherefore, the Premises Considered, the Federal Trade Commission, on this 7th day of December, A. D., 1940, issues its complaint against said respondents.

NOTICE

Notice is hereby given you, Ultra-Violet Products, Inc., a corporation, respondent herein, that the 10th day of January, A. D. 1941, at 2 o'clock in the afternoon, is hereby fixed as the time, and the offices of the Federal Trade Commission in the City of Washington, D. C., as the place, when and where a hearing will be had on the charges set forth in this complaint, at [7] which time and place you will have the right, under said Act, to appear and show cause why an order should not be entered by said Commission requiring you to cease and desist from the violations of the law charged in the complaint.

You are notified and required, on or before the twentieth day after service upon you of this complaint, to file with the Commission an answer to the complaint. If answer is filed and if your appearance at the place and on the date above stated be not required, due notice to that effect will be given you. The Rules of Practice adopted by the Commission with respect to answers or failure to appear or answer (Rule IX) provide as follows:

In case of desire to contest the proceeding the respondent shall, within twenty (20) days from

the service of the complaint, file with the Commission an answer to the complaint. Such answer shall contain a concise statement of the facts which constitute the ground of defense. Respondent shall specifically admit or deny or explain each of the facts alleged in the complaint, unless respondent is without knowledge, in which case respondent shall so state.

* * * * *

Failure of the respondent to file answer within the time above provided and failure to appear at the time and place fixed for hearing shall be deemed to authorize the Commission, without further notice to respondent, to proceed in regular course on the charges set forth in the complaint.

If respondent desires to waive hearing on the allegations of fact set forth in the complaint and not to contest the facts, the answer may consist of a statement that respondent admits all the material allegations of fact charged in the complaint to be true, Respondent by such answer shall be deemed to have waived a hearing on the allegations of fact set forth in said complaint and to have authorized the Commission, without [8] further evidence, or other intervening procedure, to find such facts to be true, and if in the judgment of the Commission such facts admitted constitute a violation of law or laws as charged in the complaint, to make and serve findings as to the facts and an order to cease and desist from such violations. Upon applica-

tion in writing made contemporaneously with the filing of such answer, the respondent, in the discretion of the Commission, may be heard on brief, in oral argument, or both, solely on the question as to whether the facts so admitted constitute the violation or violations of law charged in the complaint.

In Witness Whereof, the Federal Trade Commission has caused this, its complaint, to be signed by its Secretary, and its official seal to be hereto affixed, at Washington, D. C., this 7th day of December, A. D. 1940.

By the Commission.

[Seal] OTIS B. JOHNSON,
Secretary. [9]

[Title of Commission and Cause.]

ANSWER TO COMPLAINT

Comes now the respondent in the above entitled complaint, The Ultra-Violet Products, Inc., a corporation and answers as follows:

Paragraph One: Admits the Ultra-Violet Products, Inc., is a corporation organized, existing in, and doing business under and by virtue of the laws of the State of California, with its principal office and place of business located at 5205 Santa Monica Boulevard, in the City of Los Angeles, State of California. It admits that it is now, and for more than the two years last past has been engaged in

the manufacture of a device designated as "Life Lite", and in the sale and distribution in commerce between and among the various states in the United States and in the District of Columbia. Admits also that said device is a quartz lamp of the so-called "cold" type, and that it is sold, designed and intended for home use by and for the purposes designated in Paragraph One of the above numbered docket.

Paragraph Two: Respondent admits being engaged in the business as aforesaid, and of causing and of having caused its said device, "Life Lite", when sold, to be transported from its said place of business in the state of California in the manner and in the terms outlined in Paragraph Two of the complaint.

Paragraph Three: Respondent admits that in the course and conduct of its aforesaid business it has disseminated and is now disseminating and has caused and is now causing the disseminating, advertisements concerning its said products by the United States mails, and by various other means in commerce as defined in the Federal Trade Commission Acts. And respondent further admits that the sentences and paragraphs quoted in the last eight lines of Page 2 and in all of the lines on Page 3, and 4, and the first [10] seven lines of Page 5 of the above entitled docket, are quotations lifted from various advertisements disseminated by the respondent, but that each quotation outlined in the complaint, being separated from the balance of the text cannot, in each separate case, be judged

as it stands alone. Respondent denies that, as alleged in Paragraph Three of the complaint, said advertisements were, or are, false, misleading and deceptive.

Paragraph Four: Respondent admits that by use of the advertisements set forth in Paragraph Three of this docket and by the use of similar representations not set forth therein, it has by implication, represented to the general public that its said device, herein designated as "Life Lite", was of the type and for the purposes set forth in Paragraph Four.

Paragraph Five: Respondent admits that, as set forth in the first paragraph of Paragraph Five of the complaint that the lamp sold by the respondent emits Ultra-Violet rays of approximately 2540 angstrom units. As for the other allegations set forth in the first paragraph of Paragraph Five, the respondent cannot answer.

Respondent denies all of the allegations set forth in the second or last paragraph of Paragraph Five in the complaint and sets forth, rather, that respondent's device will give benefits to the skin and to the general health of the individual in the manner and within the therapeutic limits outlined in the respondent's advertising. Respondent denies that the value of their device is limited to the possible destruction of bacteria when present on the surface of the skin or that it would be of no value in the treatment of the various ailments, infections and diseases set forth in the second paragraph of Paragraph Five. Respondent denies that its device

is incapable of penetrating the layers of the skin sufficiently to reach such germs and organisms which are not generally found on the surface of the skin. Respondent furthermore alleges that this device will stimulate the tissues in the skin and will build up resistance in the body against disease, will produce a chemical reaction in the body and do the other and various specific functions set forth in this paragraph.

Paragraph Six: Respondent denies that, as set forth in this paragraph, that said advertisements failed to reveal facts material in the light of the representation contained therein and failed to reveal that the unsupervised use of respondent's device for therapeutic purposes by persons not trained in the operation of said device, and not skilled in the diagnosis, analysis and the methods of treatment of diseases, may result in severe burns, and other serious and irreparable injuries to health. On the contrary, respondent claims that the user of respondents device is automatically protected against over-exposure by means of a timing mechanism contained in the device and by warnings and instructions contained in the device. [11]

Paragraph Seven: Respondent denies all the allegations set forth in this paragraph.

Paragraph Eight: Respondent denies all the allegations set forth in this paragraph.

Wherefore, the premises reconsidered the Ultra-Violet Products, Inc., asks that this complaint be vacated.

SECOND ANSWER TO COMPLAINT

The respondent, again admitting its corporate title, existence, and place of business as set forth in the first answer of this complaint comes now and as a separate answer, further sets forth:

That all of the statements, representations, and claims made in its advertisements in the period mentioned in the above numbered docket were made in good faith and on the basis of investigation and facts revealed in technical and scientific literature available to the respondent, and for the purposes of substantiating these statements, representations and claims, cites the following nineteen exhibits, together with the bibliography appended to each exhibit, and each of which exhibits, together with the bibliography thereto, is made part of this second answer.

Exhibit 1:—The Use of “Cold Quartz” Light in General Practice, Archives of Physical Therapy, X-Ray, Radium, February, 1933, Pages 72 to 75 Inc.

Exhibit II:—Further Studies in Ultraviolet Treatment of Erysipelas, Archives of Physical Therapy, X-Ray, Radium, September, 1937, Pages 574 to 575.

Exhibit III:—“Cold Quartz” Ultra-Violet Orificial Irradiation, Archives of Physical Therapy, X-Ray, Radium, February, 1932 Vol. XIII, Pages 82 to 86.

Exhibit IV:—Influence of Ultraviolet on the Role of Oxygen in Mineral Metabolism and Immunity

Reactions, Archives of Physical Therapy, X-Ray Radium, April, 1933, Pages 222 to 224.

Exhibit V:—Ultraviolet Radiation of Erysipelas, Archives of Physical Therapy, X-Ray, Radium, June, 1937, Pages 363 to 364. [12]

Exhibit VI:—Physical and Therapeutic Considerations of the Mercury Spectrum, Archives of Physical Therapy, X-Ray, Radium, June, 1933, Pages 356 to 359.

Exhibit VII:—Dr. Albert Bachem, Ph.D., College of Medicine, University of Illinois, Archives of Physical Therapy, XIII, Pages 614 to 619.

Exhibit VIII:—Ultraviolet Irradiation in Skin Diseases, Archives of Physical Therapy, March, 1940, Page 188.

Exhibit IX:—Rational Ultraviolet Therapy and Skin Sensitometry, Archives of Physical Therapy, Nov., 1939, Page 678.

Exhibit X:—Genital Tuberculosis, The Journal of the American Medical Association, October 7, 1939, Vol. 113, No. 15, Page 1392.

Exhibit XI:—Experiences With a New Type of Mercury Glow Lamp, Archives of Physical Therapy, Nov., 1938, Pages 661 and 662.

Exhibit XII:—The Physical Aspects of Ultraviolet Therapy, The Journal of the American Medical Association, July 30, 1938, Vol. 111, No. 5, Pages 419 to 422.

Exhibit XIII:—Clinical Aspects of Ultraviolet Therapy, The Journal of the American Medical Association, July 23, 1938, Vol. 111, No. 4, Pages 312 to 316.

Exhibit XIV:—Precise Evaluation of Ultraviolet Therapy in Experimental Rickets, *New England Journal of Medicine*, Vol. 216, No. 4, Pages 165 to 169, Jan. 28, 1937.

Exhibit XV:—Production of Erythema and Tan by Ultraviolet Energy, *The Journal of the American Medical Association*, June 17, 1939, Vol. 112, No. 24 — Pages 2510 to 2511.

Exhibit XVI:—Archives of Physical Therapy, X-Ray, Radium (Official Publication American Congress of Physical Therapy), *Archives of Physical Therapy, X-Ray, Radium*, Feb., 1933, Pages 108 to 109.

Exhibit XVII:—The Action of Ultraviolet Radiation on Dermatophytes, *Journal of Cellular & Comparative Physiology*, Vol. 13, No. 3, Pages 391 to 402, June, 1939.

Exhibit XVIII:—Ultraviolet Irradiation in Skin Diseases, *The British Journal of Physical Medicine*, Vol. 2, No. 11, Nov., 1939.

Exhibit XIX:—Ultraviolet Irradiation in Skin Diseases, *The British Journal of Physical Medicine*, Vol. 2, No. 12, Dec., 1939. [13]

Wherefore, reconsidering the premises in the light of the material facts in evidence in the nineteen exhibits, the respondent, the Ultra-Violet Products, Inc., ask that the above entitled complaint be vacated.

THIRD ANSWER TO COMPLAINT

The respondent, the Ultra-Violet Products, Inc. doing business in, as, and where mentioned in Para-

graph One of the first answer to the above numbered docket further sets forth as a separate answer to the complaint as follows:

That the Ultra-Violet Products, Inc. is desirous of entering into and signing stipulations with the Federal Trade Commission, covering the actions complained of in the above numbered docket for the purpose of ceasing and desisting from any further dissemination of such statements, representations and claims as, in the light of present day scientific knowledge, may be contrary to fact.

The respondent further sets forth that it has at no time, within the period mentioned, disseminated or caused to be disseminated in commerce as defined by the Federal Trade Commission Act any statements which were not to the best of its knowledge and belief, true. All such statements made to induce the purchase of its product, "Life Lite", were made in good faith, after reasonable assurance and investigation, and the respondent is, therefore, desirous of an opportunity of presenting briefs in substantiation of those said statements.

Therefore: The respondent, The Ultra-Violet Products, Inc., petitions that stipulations be drawn covering those alleged statements made by it and submitted for signature, and that the above numbered docket be closed by stipulation.

In Witness Whereof, The Ultra-Violet Products, Inc., has caused their answers to the above entitled docket to be signed by its president and caused

its official seal to be affixed thereto at Los Angeles, California on this 10th day of January, A. D. 1941.

THOMAS S. WARREN

ULTRA-VIOLET PRODUCTS,
INC.

President [14]

[Title of Commission and Cause.]

Exhibits 1 to 19 Inc. Supporting Second Answer.
[15]

EXHIBIT I

The Use of "Cold Quartz" Light in General
Practice * **

by

Harold M. F. Behneman, M.S., M.D.

San Francisco

taken from

Archives of Physical Therapy, X-Ray, Radium
February, 1933 — Pages 72 to 75 Inc.

"We have adequate proof that the rays most potent in pigmentation are between 2900 and 3300 angstrom units. Shorter rays such as those that emanate from this type of lamp, are erythema producing, and not pigmenting except in rare cases. There are two schools of thought as regards the value of pigmentation. I am of the belief that pigmentation is a defense mechanism by which the body shuts out further absorption, and that it is in no sense completely necessary for benefit. This is purely from clinical evidence, but I find support

in many other workers. Dr. Gordon Hugh published the mortality rates of 232 patients with various grades of pigmentation, suffering from tuberculosis of the spine, hips and knees. In the very good pigmenters, the mortality rate was highest, 16 per cent dying; 15 per cent of the good pigmenters died, while only 10 per cent of the slight pigmenters, and 9 per cent of the non-pigmented patients succumbed. Leonard Hill, W. T. Bovie, and C. M. Sampson agree with this in general.

“With the knowledge of these and other workers, plus the accepted fact of germicidal potency around 2540 angstrom units, it was felt that a fair appraisal of this generator could best be made in working first with pathological lesions such as ulcers, open wounds, fissures, sinuses, burns, endocervicitis, Vincent’s infection, etc. The dosage was measured by the erythema produced adjacent to the lesion. It is certainly the most impartial method of measuring or insuring effective therapeutic action.

“Too much of actinic therapy has been empirical in nature, but it was justified because of its beneficial results. In the past, much stress has been laid on the photochemical reaction or vitamin D production of light, even though the treatment of rickets was really a minor division of phototherapy. Our many cures of malignant ulcers, sinuses, etc. have not been due to vitamin D production, nor to the antirachitic action of light, but still we used these factors as standards in evaluating different lamps. It is logical and refreshing to find Coblentz

concluding, "it seems natural to use the erythema instead of the antirachitic or photochemical action as a basis of standardization. ⁽²⁾ Using that as a standard, the radiant flux and the time for producing a minimum perceptible erythema, have been determined." ⁽⁴⁾

.....

"Use was made of the advice and experience of other workers. Nugent ⁽⁹⁾ reported on 2572 treatments in the Chicago Eye, Ear, Nose and Throat Hospital, with gratifying results. Caulk and Ewerhardt ⁽¹⁰⁾ [16] have successfully irradiated the interior of the bladder for tubercular ulcers, with a special applicator designed by them. Lawrenz ⁽¹¹⁾ and Brady ⁽¹²⁾ are two of many in the dental field who have stressed the importance of and success with properly indicated and constructed radiation. Beckwith ⁽¹³⁾ reported on the bactericidal effects of this type of radiation. In a personal communication, Dr. Cora Smith King, ⁽¹⁴⁾ director of Physical Therapy in the Hollywood, Calif., Hospital, has reported on the antirachitic value of the lamp, as used there and in the Children's Hospital, Clinical results have been encouraging and interesting, in that cases of rickets improved or were cured in about half the exposure required from hot burner quartz lamps. The results in osteomyelitis were still more gratifying, as one realized that about one-third the exposures were necessary for response with this generator. This, with my own findings is certainly conclusive evidence of the fact that its greatest value is its germicidal potency.

Clinical Evaluation of Cold Quartz Generators

"I can only very briefly outline the results of our work thus far, because of the limited time allotted to this report. Case histories are available for those interested. I realize the series are not very large in each case, but it is the constancy of results which is important. The work ahead is unlimited and the possibilities in the field of radiant energy are great. The specific instances in which the Cold Quartz has been properly evaluated are as follows:

"Sluggish Ulcers, particularly varicose ulcers"

"Burns

"Endocervicitis

"Fistulas and Rectal Ulcers.....

"Vincent's Infection (Trench Mouth)

"Acne

"Boils and Carbuncles

"Nasal Antrum Disease With Sinus Involvement

"Lesions of the Urinary Tract".....

*Read at the Eleventh Session of the American Congress of Physical Therapy, New York, September 8, 1932.

**From the Department of Medicine, University of California Medical School.

References

2. Coblentz, W. W.: Ultraviolet Radiation for Therapeutic Purposes. *J.A.M.A.*, 99:125, (July 9) 1932.

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EXHIBIT I-A

Pages 76-77

Discussion

“Dr. Disraeli Kobak (Chicago): I know of no more graphic illustration to picture the present situation which confronts both the physician and manufacturer in regard to their scientific exploitation of so-called Cold Quartz light than the trite expression, “trial and tribulation.” Both have experienced disappointments, elations and unjust criticisms in their attempt to demonstrate a new and improved apparatus of therapeutic and biological constructive possibilities. To demonstrate these possibilities or impossibilities it was necessary to break through the conservative crust of an orthodox profession and of opinions that were counter to the belief in this accomplishment. It is therefore to the credit of men like Hibben and in this instance, Behneman, who were adventurous to ride against the tide of fixed opinion and demonstrate a new innovation in ultraviolet therapy. To accomplish the purposes of the present investigation it was necessary to face criticism that he was prone to relinquish established facts for new possibilities; in other words to go counter to that classical couplet which admonishes to: [18]

‘Be not the first to cast the old aside

Nor yet the last by whom the new is tried.’

—a couplet which contains more rhyme than reason, and never has been part of the litany of the pioneer, the research worker, nor the leader of a new endeavor.

To demonstrate that Cold Quartz generators had a legitimate place in conservative medical practice it was necessary to prove beyond doubt that their physical and biological characteristics were similar to the accepted bands of radiation inherent in other artificial sources. On theoretical grounds it was difficult for the students of radiation therapy to orient themselves to this new type of radiation until certain of the categories associated with its reactions were proved. These were its erythemogenic qualities, its bactericidal properties and clinical effects. Dr. Behneman is to be highly commended for demonstrating similar therapeutic possibilities with Cold Quartz radiation which should stimulate others to similar efforts." [19]

EXHIBIT II

Further Studies in Ultraviolet Treatment of Erysipelas*

Miland E. Knapp, M.D.

Minneapolis, Minnesota

taken from

Archives of Physical Therapy, X-ray, Radium

September, 1937 - Pages 574-575

Conclusions

"1. Ninety-one cases of erysipelas treated by

*Read at the Mid-Western and Southern Sectional Meeting of the American Congress of Physical Therapy, St. Louis, Missouri, March 9, 1937.

ultraviolet alone are added to the previous reports from the Minneapolis General Hospital. This enlarges the entire series of 510 cases.

"2. Ultraviolet radiation has given consistently good results over a period of eight years.

"3. The complications and deaths are discussed.

"4. Ultraviolet seems to be particularly useful in reducing the mortality among small children."

EXHIBIT II-A

Discussion

"Dr. J. G. Jenkins (Temple, Texas): Dr. Knapp and I are very much in accord on the treatment of erysipelas. For the last few years we have been using ultraviolet, and so far we have found that it is much more satisfactory than the old method. Of course, we use the cold compresses, and we use some serums. I remember back when we used ichthyol, probably for the psychic effect of the color. I doubt if we got much results from it. In those days the cases would run for several weeks, and the convalescence was very slow. But since we have been using ultraviolet we find that the cases respond much more rapidly and that the period of convalescence is very short. The patients are allowed to leave the hospital in much less time.

"I think Dr. Knapp is correct when he says that it is necessary to use heavy dosage * * * *"

EXHIBIT III

“Cold Quartz” Ultra-Violet Orificial Irradiation*

by

Oscar B. Nugent, M.D.

Chicago

From the Ophthalmologic Department of the
Chicago Eye, Ear, Nose and Throat Hospital
taken from

Archives of Physical Therapy, X-ray, Radium
February, 1932 Vol. XIII, Pages 82-86

“It is obvious, even to the casual thinker, that the ‘cold quartz’ orificial tube would be a great advantage over other forms of ultra-violet ray apparatus, and the ease with which the source can be carried in close proximity to the affected parts, is also more than attractive in nose affections. Acne rasacea, chronic atrophic rhinitis, septal ulcers and ethmoiditis have been benefited by its application.

“The duration of treatment with the cold quartz orificial apparatus is from twenty seconds to three minutes, the average treatment being from one-half to one minute.

“In the Chicago Eye, Ear, Nose and Throat Hospital we have treated with the cold quartz orificial tube 1028 patients during the last five months. This involved 2572 treatments or an average of two and one-half treatments per patient. The range of treatments was from one to seventeen. The following table shows the number of patients treated in the various departments:

"Mouth	14
Eye (Exclusive of all corneal ulcers which are treated with the Hirshfeld Radiant Lamp)	101
Ear	380
Nose	432
Throat (Including treatments to the lar- ynx)	101

"Many of the above patients were treated with the cold quartz only, and many received other treatments at the same time. The results were, on the whole, much more gratifying than we had expected. Only eight cases were unsatisfactory. Of these eight, six patients should never have been treated with ultraviolet rays as their condition was not such as would respond to this treatment.

"In some cases we have only a notation that the condition had improved, the patient not having returned for further and complete treatment. In a fair percentage of these cases we are justified in assuming that the condition was cured. There are some, especially those who received only one treatment, of whom we have no account as to the results. But in those cases in which we were privileged to follow the patients through the entire course the results were very gratifying. [21]

Summary

"The 'cold quartz' orificial apparatus has demonstrated to us that it is superior to all other forms of ultraviolet irradiation apparatus in treatment of affections in cavities, and small areas on the body surface.

"It is unusually well adapted for the treatment of diseases of the eye, ear, nose and throat." [22]

EXHIBIT IV

Influence of Ultraviolet on the Role of Oxygen In Mineral Metabolism and Immunity Reactions*

by

G. J. Warnshuis, M. D.

Milwaukee

taken from

Archives of Physical Therapy, X-ray, Radium

April, 1933 - Pages 222 to 24

"The discovery of Vitamin D and its relationship to ultraviolet has been a great boon in supplying a rational explanation of the effects produced by ultraviolet radiation, both clinically and in animal studies. Some of the effects of ultraviolet, such as the action on mineral metabolism, blood platelet formation, and body growth, can be duplicated by administration of Vitamin D, but not in any case with the same positive and rapid response. (9, 10, 11) On the other hand, clinical observation shows that response to ultraviolet includes many reactions that are not influenced by Vitamin D feeding. Increased tone of the musculature, decided improvement of the appetite and intestinal peristalsis, mental invigoration, increased resistance to infection, improved endocrine function, correction of dyscra-

*Read at the Eleventh Annual Session of the American Congress of Physical Therapy, New York, September 6, 1932.

sias and allergy, all of these are frequently demonstrated so strikingly that it would appear as though every reaction of cell chemistry had been energized by the irradiation.

“The proof that such acceleration of oxidation and reduction reactions does take place apart from and in addition to any effects that may be attributed to Vitamin D activation is not lacking. V. Hofnagel in spectroscopic examinations of 400 cases of tuberculosis in children and 100 cases of early tuberculosis in war prisoners demonstrated a definite increase in activated oxygen in the blood. 5. A greater excretion of chlorides in the urine indicating a reduction in acidosis has been shown to follow exposure to ultraviolet.

“Although increase in the basal metabolism rate following ultraviolet radiation has been disputed, we have demonstrated, at least, a temporary change immediately after irradiation.

“The studies of Leonard Hill on infusoria as well as those of Carl Sonne and of Gottschalk (3) and Nonnenbruch on frogs establish the fact that in cold blooded organisms, oxidation is increased by ultraviolet radiation.

“In the last analysis, immunity reaction, bacteriolysis, are nothing else than a process of oxidation and reduction. A number of infectious diseases, especially tuberculosis, pertussis and erysipelas have been favorably influenced by ultraviolet rays. Increased antibody formation (2) and bactericidal power (14) have been demonstrated experimentally. Pertinent to this point is the fact that the tincture

guaiac and benzidine test for occult blood depends on the oxidase contained in the leucocytes and red cells of the blood. [23]

“The increased phagocytosis following ultraviolet irradiation and the improved state of resistance to bacterial invasion, resulting from regular exposure of the body to these rays, finds the most logical explanation in the influence on immunity reactions of a greater chemical activity of the oxygen contained in the blood and tissues. Additional support for this theory may be found in the well known sensitivity of bacteria to nascent oxygen.

“Another observation yielding the impression that there is a direct relationship between calcium metabolism and the state of oxidation lies in the fact that many cases of allergic sensitization are characterized by a deficiency of calcium. In such cases the improvement in symptoms following ultraviolet irradiation is proportionate to the degree of calcium deficiency (Brown and Hunter). The frequent association of allergy and calcium deficiency would point to a common cause, viz., suboxidation.”

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EXHIBIT V

Ultraviolet Radiation of Erysipelas*

by

J. G. Jenkins, M.D.

Temple, Texas

taken from Archives of Physical Therapy, X-ray,
Radium June, 1937 pp 363-4

Technic

"I always maintain the quartz mercury lamp 10 to 12 inches from the patient in order that he may have the advantage of the short rays. * * * * After the first treatment pain and tenderness are relieved, and the spread of the disease is definitely checked. The reason why ultraviolet radiation relieves the pain in erysipelas has not been explained. Troup² believes this is due, in part, to the analgesic effect on the interepithelial nerve endings."

*Read at the Fifteenth Annual Session of the American Congress of Physical Therapy, New York City, September 9, 1936.

Summary

"1. Ultraviolet radiation for erysipelas has proved superior to other remedies.

"2. The temperature is reduced to normal in a shorter time than by any other method.

"3. After the first application the overwhelming majority of patients are free of pain.

"4. The time of hospitalization is shortened.

"5. Complications are rare.

"6. The mortality rate is lower than that of any of the other methods of therapy."

References

"2. Troup, W. Annandale: Note on Treatment of Erysipelas by U-V Irradiation, *Brit. J. Phys. Med.* 7:163 (Dec.) 1932. [25]

EXHIBIT V-A

"Dr. Norman E. Titus (New York) * * * *
The point I wish to stress is that the dose that was effective in white individuals was equally so in negroes. This leaves the question of the way ultra-violet works still very undecided.

"I agree that it is desirable to irradiate three or four inches beyond the border of the erysipelas. Whether this is absolutely necessary, only time and research will tell because if the entire lesion is covered by a piece of cardboard and the skin six inches away from the lesion is well irradiated, the lesion will disappear. I observed this strange reaction on a child I treated, that had a severe cellulitis of

the scalp and erysipelas extending beyond the scalp. I gave it one treatment of about 12 or 14 E. D. and the poor child looked so bad the next day I hesitated to repeat it on the head. I therefore gave 20 E. D. on the buttocks and lumbar region and the erysipelas promptly cleared up within 24 hours. This appears to me to indicate that the effects of the treatment are more general than local. The fluid in the oedematous skin is reabsorbed, and increases the resistance of the body to the existing infection." [26]

EXHIBIT VI

Physical and Therapeutic Considerations of the Mercury Spectrum*

by

John Severy Hibben, M. C.

and

John S. Beckett

Physical Chemist, R. C. Burt Scientific
Laboratories

Pasadena, California

taken from

Archives of Physical Therapy, X-ray, Radium
June, 1933 - Pages 356-359

Factor of Dosage

"The other division of ultraviolet radiation, the

*Read at the Eleventh Annual Session of the American Congress of Physical Therapy, New York, September 9, 1932.

abiotic, concerns radiation below 2900 Å and as low as 2200 Å. These rays are erroneously supposed to destroy Vitamin D, while as a matter of fact Smacukla, Sonne and Reckling,⁽³⁾ Marshall and Knudsen, ⁽⁴⁾ and Steenbock,⁽⁵⁾ have shown that wave lengths between 2200 Å and 2800 Å are more rapid than frequencies between 2900 and 3160Å in the activation of Vitamin D, and do not destroy Vitamin D, if properly dosed ultraviolet is used. Accordingly, in the Cold Quartz Whole-Body radiation generator we have an effective agent against calcium deficiency disease, and a uniform source of emission can be used in definite dosage.

Factors of Penetration

“The next problem in the therapeutic application of ultraviolet is the question of penetration and absorption. The law of von Grotthus states that only the radiation which is absorbed is active in producing chemical change; and to have absorption we must have penetration.

“As a matter of fact, the penetration of ultraviolet through the normal skin is a rather negligible factor regardless of wave lengths and intensities, and it is believed that some day we will find that the therapeutic results of ultraviolet irradiation do not depend on this factor alone, but rather upon photochemical change in the outer layer of the skin produced by the ultraviolet and other secondary radiation and absorption factors. These secondary radiations must in turn penetrate to the necessary depth to accomplish the desired result.

“In regard to the penetration of ultraviolet rays into live animal tissues, Anderson and Fraser⁽⁶⁾ give the following conclusions:

“After a consideration of these experiments and of the literature it appears justifiable to make a few generalizations of the transmission of ultraviolet rays through the human skin”:

“1. The epidermis of the young child varies between 0.15 and .25 mm. in thickness. Through this thickness ultraviolet rays may be transmitted to the following extent:

2567 A. Trace to 0.5 per cent.

2967 A. 1 per cent to 5 per cent.

3130 A. 5 per cent to 10 per cent.

2. The epidermis of adults is considerably thicker than that of [27] young children, averaging about 1mm. The amount of incident ultraviolet radiation which can normally penetrate through this layer is for all wave lengths of the ultraviolet less than 0.1 per cent.

“The figures correspond to the finding of our well-known American authority, Coblentz: ⁽⁷⁾

Far ultraviolet 1800 to 200A.

Superficial 0.1 to 0.3 mm.

Near ultraviolet 2900 to 3650 A.

Superficial 0.3 to 0.5 mm.

“Rosewarne⁽⁸⁾ gives a table of the comparative penetration of various rays through the human skin as follows:

Penetration of skin by light rays—

Length of Wave	Penetrate to	Effects
2000 to 2400 A.	The horny layer (Corium).	Surface organisms killed. Erythema pro- duced.
2400 to 2900 A.	The basal cell (Stratum Granu- losum).	The same pigments formed in this layer.
2900 to 3300 A.	Network of blood ves- sels (Rete Vascu- losum).	Stimulation of sweat glands and sympathe- tic nerve terminals. Communication with blood.

“Proven facts About Ultraviolet. Properly dosed ultraviolet rays have prophylactic and curative effects on rickets, infantile tetany, apasmophilia and osteomalacia.

“Conditions Improved by Ultraviolet Radiation.

1. Irradiation of prenatal and nursing mothers has a definite preventive effect on rickets. 2. Lesions of erysipelas are benefited with one or more irradiations of ultraviolet rays of wave lengths of 2800 A or shorter when sufficiently intense. 3. Tuberculosis of the bone, articulations, peritoneum, intestines, larynx and lymph nodes. Ultraviolet seems to have a specific and selective action.

“Skin Diseases.

a. Lupus Vulgaris. Ultraviolet acts specifically on this skin lesion in wave lengths of 2800 A or shorter if sufficiently intense.

b. Superficial Fungus infections of hands, feet and body. 1st and 2nd degree of erythema doses of ultraviolet are helpful.

c. Pityriasis rosea. Second degree erythema doses are needed in these cases.

d. Psoriasis. Initial and superficial eruptions respond to second degree erythema doses of ultra-violet; slightly infiltrated and [28] deeply infiltrated cases respond slowly. All types tend to recur. General body irradiations is persisted in will clear up many cases.

e. Alopecia areata. 3rd or 4th degree erythema will often stimulate growth of hair in early cases, older cases sometimes show improvement.

f. Impetigo. Two or three treatments using a second degree erythema dose after scabs and crusts have been removed will usually clear up the case.

“Treatment of Wounds. In my practice nearly every wound is irradiated daily at each dressing time, using short wave lengths for a time equivalent to a first or second degree erythema. I believe this adjunct to be of special value in infected wounds.

“Electrical Burns. Ultraviolet in these cases stimulates healthy granulations and helps to keep the wound clean. Here I employ first or second degree erythema of intense short wave lengths.

“Skin Grafting. Ultraviolet is a distinct aid in preparing the wound for skin grafting. It produces healthy red vascular granulations free from exudate. Here also first and second degree erythema is produced, using short wave lengths.

“Almost every disease known could be mentioned

and we would find a claim that ultraviolet was indicated.

“1. As a tonic Effect. It is my experience and belief, without scientific proof, however, that general body radiations have increased the physical well-being of patients. We have observed that since we have routinely irradiated our post-operative cases their convalescence has been markedly shortened. In deficiency cases the blood count shows increases of hemoglobin leucocytes and blood platelets. Basal metabolism rate is raised in previously low case.

“2. Common Colds. In spite of lack of confirmation of the work of Maughan and Smiley ⁽¹⁰⁾ who claimed to have reduced the incidence of colds 40 per cent in a series of college students, my experience has proven it a valuable prophylactic adjunct.

“4.” Ultraviolet in Bronchial Asthma. Unger ⁽¹¹⁾ believes that as an accessory method of treatment, ultraviolet irradiations help as a tonic and seem to be especially valuable in the undernourished. He believes it has no specific value as yet. His cases have certainly improved since he has adopted its use.

Conclusion

“It has been shown that the therapeutic range of ultraviolet lies approximately between 3200 Å to 2200 Å; that these wave lengths are more rapid than those frequencies of longer wave lengths in

the activation of Vitamin D, and do not destroy Vitamin D if proper dosage is administered." [29]

References

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"11. Unger, I.: *Progress and Treatment of Bronchial Asthma*. *Ill. Med. J.*, 55:270 (Oct.) 1930. [30]

EXHIBIT VI-A

Discussion

"Dr. Jerome Weiss (Brooklyn): * * * *

Such inconsistencies do not follow through Dr. Hibben's paper. The review of the uses of ultra-

violet light is excellent and of particular value since based largely upon actual personal experience, rather than being strictly a compilation or review of the literature. It is pleasing to note the attention which Dr. Hibben gives to the treatment of wounds with ultraviolet light. I would like to mention in this connection the technic of the so-called "pink reaction," which I have found very useful. In this the daily dose of ultraviolet light is determined by the progress since the previous treatment. If the wound is not clean and has not improved, the dose is increased. If blue or cyanotic, the dose has been too large, and is reduced or omitted for the day. If the tissues are found to be of a bright pink color and clean, the dose has been correct and is repeated."

EXHIBIT VI-B

Discussion

"Dr. N. H. Polmer (New Orleans): * * * *

We are reminded of von Grotthus' law which states that only those radiations which are absorbed produce chemical reaction. Mayer calling attention to the studies of Bachem and Reed, states that at 2800 A, there is such a marked absorption in the corneal and prickle cell layers of the skin that the antirachitic effect of this particular wave length must occur in these layers. He points out that on both sides of this band, namely, 3000 A and 2500 A, there is a deeper penetration reaching the mal-

pighian layer and corium which indicates that the erythema production lies in the corium or just beneath the upper layers.

"Gate tells us that the maximum bactericidal effect of ultra violet radiation lies between 2600 Å and 2700Å, and whereas most of the radiation of the cold quartz generator is at 2537 Å, it appears to me that in addition to its erythema producing effect, these radiations should be bactericidal. This is further substantiated by Eidenow who tells us that only those rays which produce an erythema will increase the bactericidal property of the blood. Therefore, with the information available at the present time and the ultraviolet radiation from the cold quartz generator, it appears to me that we can state it should be expected to produce erythemogenic effects, slight bactericidal effects, both direct and indirect, and possibly antirachitic effects of therapeutic value.

"I asked Dr. Coblentz what in his opinion were the therapeutic properties of wave length 2537 Å? He replied, 'I am a physicist and a scientis primarily. I can tell you what is in the lamps you use, the kind and amount of wave lengths they produce, but it is for you physicians, clinicians and physical therapists to find the uses of these radiations.'

"The problem is being studied now by Drs. Hibben, Clifton, Weiss, Bachem, Kovacs, Kobak, Ewerhardt, Krusen, Titus, Levine, and many others in our Association, and we hope that in the coming year the diligent work of these investigators will add more proven facts about ultraviolet light and

that ultraviolet irradiation will take its ethical [31] place, not in the blaring light of exploitation, but in the spectrum of rational, scientific physical medicine."

EXHIBIT VI-C

Discussion

"Dr. H. M. F. Behneman (San Francisco): It is gratifying to work thousands of miles from another Fellow of the Congress and to come here and find some basic, fundamental confirmation of purely clinical findings that I had reported yesterday in about 100 cases. I am particularly interested in the confirmation by these workers of the latent period and the shorter reaction time in so-called cold quartz irradiation and the range of time exposure for producing erythema without blistering by means of these wave lengths."

EXHIBIT VI-D

Discussion

"Dr. Frank T. Woodbury (New York) * * * *

This matter of the spectrum is also not only a matter of the substance which emits the spectrum but of temperature. Consider the carbon arc lamp and its spectrum. If you raise its temperature a few degrees, you have the spectrum entirely shifted. Your prescription has changed. Everyone knows what a difference it makes with sunshine from hour

to hour, from minute to minute, in altitude, presence of gas, fog, dust and so forth in the air in our heliotherapeutic prescription.”

EXHIBIT VI-E

Discussion

“Dr. J. S. Hibben: * * * *

I treated a case of acne on the face of an adolescent, very blonde and blue-eyed young girl. She had several discreet superficial pustules which I treated with slight pressure for one minute, using the cold quartz orificial lamp. I then called in my laboratory technician and plated a culture from one of these, intending to make an autogenous vaccine. After 24, 48 and 72 hours incubation, no growth was apparent. I repeated the experiment on her as well as on several patients and found that in small superficial pustules that I evidently obtained sterilization, while in the larger pustules with thicker skin covering this could not be done.

“Am I right in my assumption that in selected cases of acne intense ultraviolet radiation in the region of 2537 Å that improvement may be due to the fact that some or all of the organisms are killed, the patient thus producing his own immunity?

“Peskind has advanced the theory that focal immunization consists in killing off some of the germs in a focus, setting free antigen, which is absorbed by the receptive cells in the adjoining tissues, which in turn have been rendered accessible

and permeable to this antigen, thus producing free antibodies, especially opsonins which enter the circulation and exert a curative systemic effect." [32]

EXHIBIT VI-F

Discussion

"Dr. Albert Bachem (Chicago):. It was mentioned that the erythema reaction was produced in the corium by the ultraviolet. This might lead to an erroneous conclusion as to the mechanism by which an erythema is produced. Kellogg and Macha have shown that the original effect of ultraviolet is on the prickle cell layer and which in turn is the source of toxin and hormone production. All other effects which lead to erythema and perhaps to pigmentation are produced as secondary effects." [33]

EXHIBIT VII

Dr. Albert Bachem, Ph.D.,
College of Medicine, University of Illinois
in

Archives of Physical Therapy, XIII:614-619

"From the various physical and biological effects observed we can state that the wave length, 2537 AU, has enough penetrating power to produce biologic effects; that it causes an erythema with little danger of over-exposure and accumulation; that it has a positive antirachitic effect, i.e., it produces Vitamin

D and does not destroy it as long as excessive irradiation is avoided. Hence, there is no antagonistic effect between this and the longer actinic rays. In regard to the bactericidal effect it does not differ from rays of longer or shorter wave length. In all these respects the wave length, 2537 AU, must be considered as having normal actinic properties, which makes it useful for therapeutic purposes.”

[34]

EXHIBIT VIII

Ultraviolet Irradiation in Skin Diseases.

Austin Furniss.

Brit. J. Phys. Med. 2:280 (Dec.) 1939.

taken from

Archives of Physical Therapy, March, 1940,

Page 188

“In seborrhoea it is advisable to give the scalp a spirit shampoo before irradiation. Long hair will require thorough combing during irradiation to ensure exposure of the scalp. Sulphur ointment may be applied between exposures. Seborrhoeic dermatitis and infiltrated patches may require more severe reactions—second to third degree erythema—if plaques are associated with the popular dermatitis.

“Herpes in its various forms responds well to ultraviolet irradiation. Relief is afforded not only from the severity of the eruption but from the accompanying pain. In fact, if seen early enough,

little or no pain is experienced after the first treatment. Vigorous local irradiation (second degree erythema doses) not only stop the immediate discomfort but prevent scarring. * * * *

“Dermatitis venenata responds satisfactorily to ultraviolet irradiation. After one or two doses the stinging is dispelled and spreading is usually prevented. Treatment is given every other day, using the air-cooled lamp, a second degree erythema being produced. Other examples of this condition respond well to ultraviolet light.

“The effects of actinotherapy in erysipelas are specific. A critical fall in temperature sets in within 24 to 48 hours, and the condition clears up quickly. Relapses are rare, and clear up equally readily on subsequent irradiation.

“Any greasy ointment is removed. Using the Kromayer lamp at 2 inches distance, the whole or the affected area, including $1\frac{1}{2}$ inches of healthy skin at the margins, is irradiated to produce a heavy third degree reaction. Only the eyeball need protection in head cases. The Kromayer lamp is undoubtedly best for small areas. For larger areas, the mercury-vapour lamp should be used, covering the healthy skin almost to the margins of the area. One treatment usually suffices, unless part of the area has been under-irradiated. The area should be left uncovered after the irradiation.” [35]

EXHIBIT IX

Rational Ultraviolet Therapy and Skin Sensitometry
by

Jean Saidman, M. D.

Director of the Institute of Actinology and of the
Revolving Sanitarium at Aix-les-Bains

Paris, France

taken from

Archives of Physical Therapy, Nov., 1939, Page 678

“The differences between individual opacity of the skin can be studied with a spectrograph through freshly desquamated epidermis after an erythema of the third degree. It was admitted after the researches of Hasselbalch that absorption increases with the frequency of the radiation (short ultraviolet having higher coefficients of absorption). The author pointed out that the epidermis is relatively transparent for the range 2800-2480 A. Later, after my researches, Hausser and Vahle modified the curve of erythema activity of the ultraviolet rays and introduced a second maximum of 2700-2480 A. But I consider that their curve is valuable only for some individuals (22 per cent) and not for all. I published several different charts obtained during my researches with a powerful monochromator. Some patients are more sensitive to the wavelengths 2650 and 2536 A than to 2967-3022 A; others react very strongly to 2967 and 3022 and not at all to 2536 A.” [36]

EXHIBIT X

Genital Tuberculosis

by

Eli A. Miller, M.D.

Denver

and

Mischa J. Lustok, M.D.

Spivak, Colo.

taken from

The Journal of the American Medical Association,
October 7, 1939

Volume 113, No. 15 Page 1392

“Most of the commercial sources of ultraviolet rays produce radiation of mixed wavelengths, predominantly between 2,537 and 3,130 angstroms,¹⁸ while the so-called cold quartz lamp emits a spectrum whose intensity along a wave length of 2,537 angstroms is within 95 per cent of its total spectrum emission, to all practical purposes a monochromatic radiation.¹⁹ The biologic effects of monochromatic ultraviolet radiation in the wavelength of 2,537 angstroms have been extensively studied. The bactericidal action (*Bacillus coli*),²⁰ growth restriction of tissue culture,²¹ coagulation of albumin²² and hemolysis²³ have their peak effectiveness with radiation in the region of a 2,537 angstrom wavelength. The peak of the ergosterol activation curve (formation of vitamin D) has been credited by some workers to wavelengths other than 2,537 angstroms,²⁴ and Van Wijk and Reerink have even claimed destruction of vitamin D by radiation of this wavelength.

A greater number of workers have, however, found ultraviolet radiation of the wavelength 2,537 angstroms unusually active in the production of vitamin D, both in vitro by activation of ergosterol and in vivo by cure of rickets in experimental animals.²⁵

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EXHIBIT XI

Experiences With a New Type of Mercury Glow
Lamp*

by

Richard Kovacs, M. C.

Clinical Professor of Physical Therapy, New York
Polyclinic Medical School and Hospital

New York

taken from

Archives of Physical Therapy, Nov., 1938—

Page 661-2

“* * * * The erythema effect of the zone around 3000 A emitted by hot quartz and carbon arc lamps is in over doses followed by painful blistering and strong pigmentation, while the erythema effect produced by radiation around 2500 A leaves scarcely any or at most inconsiderable pigmentation, and is not accompanied by destructive changes in the

skin, although the radiation itself is definitely abiotic to bacteria and other micro-organisms. Little clinical observation has been done so far with this zone of ultraviolet, although there are many studies available about the bactericidal effects of ultraviolet on cultures, such as those of Coblentz and Fulton,² Gates³ and Bachem.⁴

“The author has for some time carried on clinical and laboratory work with a new type of ultraviolet generator. This work has served to corroborate some of the earlier work in the effects of selective radiation and established some additional possibilities of clinical applicability.”

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EXHIBIT XII

The Physical Aspects of Ultraviolet Therapy
by

W. W. Coblentz, Ph.D., Sc.D.

Washington, D. C.

taken from

The Journal of the American Medical Association,
July 30, 1938

Volume 111, No. 5

pp 419-422

“Starting with a nonirradiated stock solution of ergosterol, having no antirachitic activity, Bills and his collaborators³ found that, although no new absorption bands occurred, after seven and a half minutes’ irradiation the animal tests revealed the development of an enormous antirachitic potency, 150,000 times that of average cod liver oil. After an exposure of twenty-two and a half minutes the potency increased to 250,000 times that of average cod liver oil. After an irradiation of thirty minutes the maximum at 2,935 angstroms had disappeared; the maximum at 2,820 angstroms was still conspicuous; the maximum at 2,700 angstroms (chart 1) was decidedly distorted, showing the development of a new band at 2,520 angstroms, and the antirachitic potency had dropped to 200,000 times that of the cod liver oil used as a standard. After three hours’ irradiation, when the new absorption band at 2,480 angstroms had developed to its maximum intensity, the antirachitic potency had almost vanished. Continuing the irradiation for from four

to fifteen hours had but little effect on the new absorption spectrum, which has a maximum at 2,480 angstroms. * * * *

“In view of the foregoing results, even though no ill effects seem to have been reported, and an excessive exposure is limited by skin tolerance as manifested by the erythema reaction, the question arises as to the desirability of conducting ultraviolet therapy with lamps emitting an excessive amount of ultraviolet radiation of wavelengths shorter than 2,800 angstroms. For example, in the so-called cold quartz type of mercury vapor lamp, more than 95 per cent of the biologically effective radiation that is emitted is of the wavelength 2,537 angstroms (chart 4). These short wavelengths have a specific germicidal action (chart 2) and, hence, are useful in dermatology. Nevertheless it is a question whether rays of such short wavelengths should be used in general ultraviolet therapy. In view of this uncertainty, the Council on Physical Therapy does not accept, for home use without the direction of a physician, lamps that emit an appreciable amount of ultraviolet radiation of wavelengths shorter than 2,800 angstroms.

The Spectral Range of Antirachitic and Erythema Reaction

“Among the earliest direct determinations of the (antirachitic) healing power of different wavelengths of homogeneous radiations are the observations of Sonne and Reklings,¹⁰ who found that the strong emission lines of the mercury are at 2,537,

2,650, 2,804, 2,967 and 3,024 angstroms had an antirachitic action, whereas wavelengths at 2,400 and 2,480 angstroms had only a slight effect; the emission line at 3,132 angstroms had a doubtful effect, and the line at 3,663 angstroms had no curative effect at all.

“The most recent and most precise evaluation of the spectral [40] antirachitic action of ultraviolet radiation is by Bunker and Harris.¹² The wavelengths of homogeneous radiation were isolated with a powerful quartz monochromator, and their intensities were evaluated radiometrically. More than 300 albino rats were used in these irradiation tests. Since complete healing (as judged by x-ray and line test) cannot be judged accurately, their criterion for judging antirachitic action was the degree of partial calcification known as the equivalent of one Steenbock unit of standard vitamin D. The principal emission lines of the mercury are between 2,537 and 3,025 angstroms inclusive were demonstrated to have antirachitic properties, and the adjacent lines at 2,483 and 3,132 angstroms, respectively, were found inactive.

“In chart 2 is shown the spectral antirachitic response for an equal energy spectrum, as deduced from the data published by Bunker and Harris.¹² The response curve is not necessarily smooth and free from indentations, although it is so depicted for the purpose of this discussion. In chart 2 also is given the spectral absorption of ergosterol.² From this it can be seen that if, as some suppose, the healing of rickets is associated in some manner with

the activation of the sterols (ergosterol, cholesterol) present in the superficial layer of the skin, then, since photochemical action occurs only in the region of absorption, there should be a close parallelism between these two curves, as indicated. For the present this appears to be an interesting coincidence, the biologic significance of which awaits solution.

“As shown in chart 2, the wave length limits of antirachitic and erythematous action are in close coincidence. Hence, since the time of exposure to ultraviolet radiation depends on skin tolerance as indicated by the erythematous response, it is apparent that, with the lamps now available in ultraviolet therapy, the time of exposure is limited by skin tolerance.

Sources of Radiation For Use in Ultraviolet Light Therapy

“From the coincidence of the spectral range of wavelengths of the erythematous and the antirachitic reaction it is evident that, with the sources of ultraviolet radiation now in general use (having a strong emission in the spectral region of 2,500 and 3,000 angstroms respectively), the dosage time of exposure that can be employed without causing a burn is determined by skin tolerance as measured by the erythematous reaction.

“In the treatment of rickets by irradiation there is but little difference in the erythematogenic and antirachitic efficiencies of the various sources of ultraviolet radiation now in use. For example, on the basis of the results published by Bunker and

Harris,¹² assuming that the spectral antirachitic response in human beings is the same as observed on experimentally induced rickets in rats (chart 2), the ratio of the calculated antirachitic efficiency of the ultraviolet radiation from various sources is as follows: 'Therapeutic C' (polymetal) [41] cored carbon arc (antirachitic \div erythema = 1.35); low voltage, high temperature mercury vapor arc in quartz (Uviarc) 1.14; high temperature, mercury vapor arc in Corex D glass (General Electric Company, S-1) 1.14; low vapor pressure, high voltage, low temperature (so-called cold quartz) mercury vapor arc in quartz 1.12 and midlatitude, midsummer, midday, sea level sunlight 0.95.

"This does not take into consideration the efficiency of antirachitic action as dependent on the before mentioned effect, possibly of different wavelengths on calcium and phosphorus metabolism, and also on the deactivation effect of short wavelengths on vitamin D, which may militate against long exposures with sources having a strong emission of wavelengths shorter than about 2,800 angstroms, e. g., the so-called cold quartz lamp, in which over 95 per cent of the activating radiation is in the resonance emission line at 2,537 angstroms. On the other hand, such a source (cold quartz) permits an overexposure, by a factor of 5 or perhaps more, without causing a painful watery blister that results from a slight overexposure to sources of ultraviolet having a relatively strong emission of wavelengths 3,100 to 3,200 angstroms. From this it appears that, since the erythema reaction is a measure of skin

tolerance, it is indirectly a measure of the effectiveness of the sources of ultraviolet radiation now in use in healing rickets."

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EXHIBIT XIII

Special Article

Clinical Aspects of Ultraviolet Therapy

by

Ethel M. Luce-Clausen, M.D.

Rochester, N. Y.

taken from

The Journal of the American Medical Association,
July 23, 1938

Volume 111, No. 4—Page 312-316

“* * * A short daily exposure to ultraviolet rays will, in spite of the deficiencies in the diet, make these rats survive as long as twenty-five weeks. They may die, but with normal bones. The mechanism that makes an organism capable of supplying mineral constituents for bone formation, even in spite of a shortage of it in the diet, is set in motion by ultraviolet radiation. That this effect is a chemical one and not brought about by some integrating mechanism in the body such as the nervous system, is shown by the following: Hess and Weinstock¹⁵ took some excised human skin and calf skin and irradiated it with a mercury vapor quartz lamp. Weighed amounts of this when fed to rats fed on a rickets producing diet proved to be completely protective, while similar amounts of nonirradiated skin, although severed from its nerve and blood supply, antirachitic properties. In the same way, a rickets producing diet can be made protective by exposure to ultraviolet radiation.

“Penetration of the Rays: Many writers have investigated the depth to which ultraviolet rays penetrate the skin. Most of them are agreed that the penetration is slight, roughly only 0.1 mm.¹⁸ Measurements of radiation that is absorbed, transmitted and reflected by the skin are admittedly very difficult to make and give variable results. Skin is not homogeneous in an optical sense, and light incident on it is largely reflected and scattered. Anderson and Macht¹⁹ point out that the depth of penetration depends on viability and that rays penetrate more deeply into living than into dead or moribund skin. These authors showed a penetration of 1.2 mm. through living tissue.

“* * * * Ultraviolet radiation raises the phosphate concentration in the blood and also promotes the deposition of lime salts in bone, through the agency of vitamin D which is synthesized in the skin. It is assumed that vitamin D, formed in the skin, is absorbed into the blood stream and carried to the bones. This theory is supported by the work of Hume, Lucas and Smith,²⁰ who showed that vitamin D could be absorbed through shaven areas of skin in rabbits, and more recently Lucas,²¹ in a series of ingenious in vitro experiments, has shown that sufficient ultraviolet of suitable wavelength can penetrate the epidermis. * * * *”

“* * * * This author quotes an analysis of the literature made by Coulter and Carter which shows that, since 1902, out of seventy competent observers forty-six had favorable and twenty-four unfavorable

results with the use of ultraviolet radiation in pulmonary tuberculosis. [43]

The Experimental Production of Skin Tumors with Ultraviolet Radiation

“Malignant tumors have been produced in rats and mice as a result of excessive exposure to ultraviolet radiation given either as sunlight or from artificial sources. Findlay³⁸ in 1928 exposed albino rats to radiation from an ultraviolet lamp at a distance of 18 inches (46 cm.) for one minute three times a week; in one out of a group of six animals a papilloma of the right ear developed and it died of senility after two years’ treatment. Similar results were obtained with mice.³⁹ The exposures given by Findlay compared with those of later writers were of very short duration. Beard, Boggess and von Haam,⁴⁰ applying the technic of Roffo—i.e., twenty hours of ultraviolet radiation daily for one year—were able to produce sarcomas and carcinomas on the eyes, ears, and heads in twelve out of a series of thirty adult rats. The lesions in these animals began to appear after two months of this treatment. Roffo⁴¹ found in his early studies that a rat tumor may contain more than twice as much cholesterol as that found in the host. He exposed rats to sunlight, and to radiations from a Hanau lamp for long periods; he analyzed skin for cholesterol and found high values in irradiated as compared with nonirradiated skin. He obtained neoplasms in a high percentage of his irradiated animals. He suggests that irradiation, by causing

an accumulation of cholesterol in the skin, may prepare the soil for subsequent malignant growth. As a result of this work, a committee was appointed by the Academy of Medicine in Paris to verify the observations of Roffo. The committee confirmed the observations and in view of the potential dangers warned the general public against the abuse of sun baths. Beard and his associates,⁴⁰ however, point out that such a warning may be unnecessary on the ground that (a) the physiologic response of the rat to ultraviolet radiation is greater than that of man and (b) the massive exposures necessary, even for the rat, to produce lesions, leave a wide margin of safety for man. It is also possible that the increased concentration of skin cholesterol produced by Roffo could be produced by other means, such as infections or irritants, and need not necessarily be regarded as a specific effect of radiation. Murray⁴² regards the production of tumors by ultraviolet radiation as merely the effect of an irritant and comparable to the effect of coal tar, x-rays, radium and animal parasites. If this is so, it would seem that, since such extraordinarily long and continuous exposures are required to produce cancer in an animal as sensitive as the rat, man is in no danger. But if it should be proved that the effect of ultraviolet radiation is more specific, if for example the carcinogenic hydrocarbons could be synthesized in the skin by exposure to radiation, then there would be more cause for alarm. Cook,⁴² in a discussion of carcinogenic substances, mentions

this as a possibility but hazards it only as a speculation to stimulate further research.

“In general, one might conclude that experiments such as these indicate a possible but not a very probable danger for man. It is obvious that treatments given should remain within the physiologic limit of tolerance.” [44]

Ultraviolet Therapy and Oral Disease

“Skin tumors have been produced in rats and mice with prolonged exposure to ultraviolet radiation, but the exposures needed are so far outside the range in general use by man, either in sun bathing or in the use of rays from artificial sources, that a warning of danger seems unnecessary. A caution, however, to avoid the abuse of radiation therapy, since its effects on the skin are imperfectly understood, is, at this stage of our knowledge, completely justified. More research is undoubtedly needed on the question of the photodynamic effect of radiation on the skin with special reference to the possible synthesis, in the skin, of the carcinogenic hydrocarbons.

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EXHIBIT XIV

Precise Evaluation of Ultraviolet Therapy in
Experimental Rickets*

by

John W. M. Bunker, Ph.D. and

Robert S. Harris, Ph.D.

taken from

New England Journal of Medicine, Vol. 216, No. 4,
pp. 165-169 Jan. 28, 1937

Summary

“Depilated rachitic rats were irradiated with measured quantities of monochromatic ultraviolet light to determine the number of ergs required to produce a ‘narrow continuous line of calcification’. The ultraviolet light from a quartz mercury arc, passed through a quartz monochromator, was measured by photochemical and physical methods.

“The principal mercury lines between 2537 and 3025 angstroms, inclusive, were demonstrated to have antirachitic properties. Adjacent lines immediately above and below this region were inactive. To produce rachitic healing equivalent to that produced by 3 international units of vitamin D, the following energies per rat were required:

angstroms	ergs
2537	775,000
2652	660,000

*From the Biological Research Laboratories, Massachusetts Institute of Technology.

Contribution No. 75 from the Department of Biology and Public Health, Massachusetts Institute of Technology, Cambridge, Mass.

angstroms	ergs
2804	600,000
2967	420,000
3025	900,000

“These differences are probably due in part to differences in absorption of the various wave lengths by the skin. They are likely due in part to the absorption spectrum of the provitamin. On a quantum basis the antirachitic effectiveness of the various wave lengths is not the same.” [46]

EXHIBIT XV

Production of Erythema and Tan by Ultraviolet
Energy

by

Matthew Luckiesh and A. H. Taylor, Cleveland
Director and Physicist, Respectively, Lighting
Research Laboratory, General Electric
Company, Nela Park

taken from

The Journal of the American Medical Association,
June 17, 1939

Volume 112, No. 24 — pp 2510-2511

“The ultraviolet wavelength region from approximately 2,500 to 3,500 angstroms encompasses the wavelengths found to be most valuable in the prevention and cure of rickets, the production of erythema and tan in human skin, the killing of germs, and various therapeutic applications. However, the effectiveness of equal amounts of energy at various wavelengths in this region varies enor-

mously for each of these reactions. Some studies of the relative effectiveness of energy of different wavelengths for some of these reactions have been made, notably for the cure of rickets, the killing of germs and the production of erythema.

"Several investigators, including ourselves,¹ have studied the effectiveness of ultraviolet energy in producing erythema, and an "erythema effectiveness" curve has been tentatively established by combining all the data available.² The accepted data for wavelengths longer than 3,150 are of questionable accuracy because the energy of longer wavelengths is relatively low in erythema effectiveness and available artificial ultraviolet sources are low in energy in the spectral region from 3,150 to 4,000. In therapeutic applications erythema has proved to be a valuable indicator of dosage of ultraviolet; hence it is important to know the relative effectiveness of different wavelengths in its production.

"Ultraviolet energy in the wavelength region from 2,500 to 2,600 angstroms can cause a strong erythema, visible a few hours after the exposure, but the inflammation subsides and disappears after a few days, leaving little or no tan."

References

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EXHIBIT XVI

Archives of Physical Therapy, X-Ray Radium
Official Publication American Congress
of Physical Therapy

Editor: Disraeli Kobak, M. D., Chicago
taken from

Archives of Physical Therapy, X-Ray Radium,
Feb., 1933. Pages 108-109

“Although the bactericidal qualities of the short ultraviolet frequencies as emitted by this and other generators, such as water cooled lamps, are now generally admitted, it is interesting to note the parallelism of their bactericidal action in that both find their greatest therapeutic efficiency in about the same spectral region. Whether the maximum peak is according to Sonne,⁽³⁾ in the region of 265 mu, or, according to Gates,⁽⁴⁾ distributed in several peaks with its maximum in the regions of 265 and 230 mu, or most pronounced from 302 mu on toward shorter wavelengths and reaches a secondary peak at 240 mu, as applied by Bachem,⁽⁵⁾ it is evident that the bactericidal quality of so-called Cold Quartz radiation is not a mooted point. It however establishes an important corrolary of the therapeutic possibilities of this special line on a scientific basis.

“Undoubtedly the most thought provoking effect found in recent experimental work with this particular form of radiation has been its antirachitic and vitamin D producing properties. It was long felt that the radiations of shorter wave lengths not

only had a degradation effect on vitamin D but were antagonistic toward antirachitic action in vivo. Yet during the very period when doubt was greatest as to the ability of monochromatic actinic rays to produce this effect, science was already cognizant of this possibility. Steenbock ⁽⁶⁾ irradiated solid cholesterol with various unmixed wavebands of ultraviolet energy by means of a monochromator, and found that the frequency of wavelength 253.7 mu in terms of absorbed energy, was more than seven and one-half times as effective in vitamin D activation as the wavelength at 302 mu, and wavelength 265 mu was ten times more effective than wavelength 302 mu. According to Marshall and Knudson,⁽⁸⁾ is explained on the basis that, 'the rate of production of vitamin D is directly proportional to the number of light quanta absorbed by ergosterol, and independent of the wavelength of the light used.' The foregoing deduction perhaps comes closer to explaining the mode of vitamin D activation with the entire gamut of the electromagnetic spectrum—from infrared radiation to the cathode rays—than specific action of particular waves.

"More recently Harris and Ober ⁽⁹⁾ have demonstrated irradiation effects with the so-called Cold Quartz on cotton seed oil. By permitting the oil to flow over the quartz of an orificial unit various time lengths of irradiation were established, the separate samples fed to rachitic rats and the effects noted. It was found that those samples irradiated the shortest period (29 seconds), contained suf-

ficient activation to raise the weight, and cure the rachitic animals in seven days. Goldblatt's ⁽¹⁰⁾ work is the most recent confirmation that the spectral band around 254 mu has exceptional antirachitic qualities. He draws the following conclusion from his studies: [48]

"It has been shown that the radiations from the cold quartz mercury lamp are powerfully antirachitic. Direct irradiation for 3 seconds daily prevented the development of rickets in rats fed on a ricket-producing diet. Direct irradiation for 10 seconds daily for two weeks at a distance of 5 inches from the burner brought about complete healing of rickets in severely rachitic rats. Advanced healing occurred in one week in rats irradiated daily for 45 seconds or longer. Under the conditions mentioned in the text, exposure of ergosterol dissolved in olive oil to the radiations from a cold quartz mercury lamp for 1, 5, 10, 20 and 30 minutes at a distance of 5 inches from the burner resulted in the antirachitic activation of all the solutions, of which 0.002 mg. of irradiated ergosterol and 0.001 cc of irradiated olive oil together prevented and cured rickets in rats. The minimum protective and curative doses were not determined.

"According to Bachem ⁽¹¹⁾ the physiological properties of the mercury line 254 mu fulfill all of the recognized postulates of normal radiation. It has enough penetrating power to produce erythemogenic, cito- and bactericidal effects. It has biological reconstructive properties to synthesize vitamin D and thus prevent or cure rickets. His

conclusions antedating the work of Boldblatt, are:

. . . has enough penetrating power to produce biological effects; that it causes an erythema, with little danger of overexposure and accumulation; that it has a positive antirachitic effect; i. e., it produces vitamin D and does not destroy it, as long as excessive irradiation is avoided; hence there is no antagonistic effect between this and the longer actinic rays. In regard to the bactericidal effect it does not differ from rays of longer or shorter wavelengths. In all these respects the wavelength 254 mu must be considered as having normal actinic properties, which make it useful for therapeutic purposes.

“With the foregoing facts before us it does not require great acumen to realize that a particular advance has been made in radiation therapy by means of the introduction of so-called monochromatic filters for therapeutic purposes.”

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11. Bachem, A.: (5) p. 618." [49]

EXHIBIT XVII

The Action of Ultraviolet Radiation on Dermatophytes

by

A Hollaender & C. W. Emmons

1. The fungicidal effect of monochromatic Ultraviolet radiation on the Spores of *Trichophyton Mentagrophytes*.

Journal of Cellular & Comparative Physiology.

Vol. 13 No. 3 Pages 391-402 — June, 1939.

Summary

"1. Spores of dermatophyte (*Trichophyton Mentagrophytes*) isolated from "athlete's foot" were suspended in a physiological salt solution, non-absorbent for the wave lengths used (2280 to 2950 A) and exposed to measured quantities of monochromatic ultraviolet radiation. The method of preparing the suspension is described.

"2. Inactivation data for 6 wave lengths in the ultraviolet range indicate that 2537 to 2650 Å is the most effective region for the fungus spores tested." [50]

EXHIBIT XVIII.

Ultraviolet Irradiation in Skin Diseases

by

Austin Furniss, L.R.C.P., L.R.C.S., L.D.S., D.P.H.

The British Journal of Physical Medicine — Vol. 2

No. 11 November, 1939

" The valuable action of ultraviolet irradiation in skin diseases is due to many effects. Amongst the general effects are:

(a) Stimulation of cellular metabolism; (b) increased resistance of the body to infection; (c) stimulation of the vasomotor reflexes of the body (there is an increased tolerance to extremes of temperature); (d) improvement in the functional activity of the skin in consequence of a redistribution of blood amongst the organs of the body; (e) production in the skin of vitamin D which hastens the healing of certain skin conditions; (f) alteration in blood chemistry (calcium, Potassium, etc) the rays acting as a mordant for calcium; and (g) a marked psychological improvement.

"Amongst the local effects are:

(a) A bactericidal action on the surface of the irradiated skin; hyperemia, with dilatation of the capillaries of the dermis; cellular nutrition is improved; (c) a sedative and antipruritic action; (d)

inflammatory and causative effects which certain conditions require can be produced; (e) a keratinous action; the basal layer of the epidermis absorbs the ultraviolet rays, and according to the photo-chemical absorption law, reactions only occur in tissues which absorb radiation.”

“ The sedative effect of ultraviolet irradiation on the nerve endings in the skin is very valuable in allaying the intense and distressing itching associated with many skin dermatosis

“Impetigo Contagiosa.

. . . .Irradiation will definitely check the infection, and it is found that 3 or 4 applications of the rays in the course of a week or ten days will usually clear an impetigo contagiosa at any stage

“Eczema.

. Ultraviolet irradiation is of especial value in the less acute and more chronic forms.” [51]

EXHIBIT XIX

Ultraviolet Irradiation in Skin Diseases by Austin
Furniss, L.R.C.P., L.R.C.S., L.D.S., D.P.H.

The British Journal of Physical Medicine Vol. 2,
No. 12 Dec. 1939

“Herpes. This disease in its various forms responds well to ultraviolet irradiation. Relief is afforded not only from the severity of the eruption but from the accompanying pain.

“Pernio (chilblains). The cure of this disease by ultraviolet irradiation is rapid and usually lasting, at least for the particular season, The worse the condition the more striking the results.

“Urticaria. Mild applications of actinic rays usually suffice to relieve the intense itching and to clear up the condition.

“Dermatitis Venenata. This condition responds satisfactorily to ultraviolet irradiation. After one or two doses the stinging is dispelled and spreading is usually prevented.

“Furunculosis. Boils, carbuncles, whitlows, septic corns, cuts and pyoderma in children seldom fail to respond to properly administered ultra-violet light applications.

Ulcers. Ulcers respond well to ultraviolet irradiation, the rays producing a direct bactericidal action on the surface organisms, relief of pain, stimulation of the local circulation, growth of healthy scar tissue, and increase of the calcium content of the blood. The cyanosed appearance fre-

quently associated with varicose ulcer turns, after irradiation, to a much healthier tint.

“Indolent wounds. Ultraviolet irradiation is a powerful factor in the healing of wounds. The direct bactericidal action of the short waved rays, combined with the leucocytosis which they produce, quickly overcomes infection, and brings the lesion to a condition in which the stimulus of milder irradiation promotes strong free proliferation of new tissue. Wounds treated in this way heal rapidly with excellent cosmetic results, leaving scars of smooth, fine texture, usually level with the skin.”

[Endorsed]: Filed F.T.C. Jan. 14, 1941 [52]

United States of America

Before Federal Trade Commission

At a regular session of the Federal Trade Commission, held at its office in the City of Washington, D. C., on the 8th day of June, A. D. 1942.

Commissioners:

William A. Ayres, Chairman,
Garland S. Ferguson,
Charles H. March,
Ewin L. Davis,
Robert E. Freer.

Docket No. 4407

In the Matter of
Ultra-Violet Products, Inc.,
a corporation.

FINDINGS AS TO THE FACTS AND CONCLUSIONS

Pursuant to the provisions of the Federal Trade Commission Act, the Federal Trade Commission on December 7, 1940, issued and subsequently served its complaint in this proceeding upon the respondent, Ultra-Violet Products, Inc., a corporation, charging it with the use of unfair and deceptive acts and practices in commerce in violation of the provisions of that Act. After the filing of respondent's answer, testimony and other evidence in support of the allegations of the complaint were introduced by Merle P. Lyon, attorney for the Commission, and in opposition thereto by Ernest A. Tolin, attorney for the respondent, before Edward E. Reardon, a trial examiner of the Commission theretofore duly designated by it, and such testimony and other evidence were duly recorded and filed in the office of the Commission. Thereafter the proceeding regularly came on for final hearing before the Commission on the complaint, the answer of the [115] respondent, testimony and other evidence, report of the trial examiner upon the evidence, briefs in support of and in opposition to the complaint, and oral argument, and the Commission, having duly considered the matter and

being now fully advised in the premises, finds that this proceeding is in the interest of the public and makes this its findings as to the facts and its conclusion drawn therefrom:

FINDINGS AS TO THE FACTS

Paragraph One: The respondent, Ultra-Violet Products, Inc., is a corporation organized, existing, and doing business under and by virtue of the laws of the State of California, with its principal office and place of business located at 5205 Santa Monica Boulevard, Los Angeles, California. Respondent is now and for some ten years last past has been engaged in the manufacture and in the sale and distribution of a certain device known as a therapeutic lamp, used for the radiation of ultra-violet rays. The lamp is sold by respondent under the trade name "Life Lite", and is intended by respondent for use in the treatment of various ailments, diseases, and conditions of the human body.

Paragraph Two: The respondent causes and has caused its lamps, when sold, to be transported from its place of business in the State of California to purchasers thereof located in various other states of the United States and in the District of Columbia. Respondent maintains and for some ten years last past has maintained a course of trade in its lamps in commerce among and between the several states of the United States and in the District of Columbia.

Paragraph Three: In the course and conduct of its business and for the purpose of promoting the

sale of its lamps, the respondent has disseminated and is now disseminating, and has caused and is now causing the dissemination of, various advertisements concerning its lamps by the United States mails and by various other means in commerce, as commerce is defined in the Federal Trade Commission Act; and respondent has also disseminated and is now disseminating, and has caused and is now causing [116] the dissemination of, advertisements concerning its lamps by various means for the purpose of inducing and which are likely to induce, directly or indirectly, the purchase of its lamps in commerce, as commerce is defined in the Federal Trade Commission Act.

Among the representations appearing in respondent's advertisements, disseminated and caused to be disseminated as set forth above, by the United States mails, in newspapers and periodicals, and by other media, are the following:

"Life Lite ultra-violet rays clear up many of the chronic skin disorders which have failed to respond to other methods of treatment. . . . Most infections of the skin respond quickly to the germ killing effects of the rays. Furthermore, they stimulate the skin tissue to build a high degree of disease resistance."

"Ultra-Violet helps to set up a chemical reaction that keeps the blood stream in balance. It aids in overcoming a deficiency of either white or red blood corpuscles. . . . As well as deficiencies of the red coloring matter that is so important as an oxygen carrying agent.

Thus, this tonic effect on the blood not only builds direct resistance to infection but also stimulates the endocrine glands that are so vital to health."

"The chemical action of ultra-violet rays soothes the nerve endings in the skin and alleviates many internal conditions. The anti-acid or alkalinizing effect of ultra-violet rays, plus their ability to increase the general resistance, help to correct many forms of illness."

"Build Better Health with Life Lite . . . A full quota of sunlight whether obtained from natural or artificial sources means a better functioning of the human body. It helps build resistance against disease, improves metabolism and increases capacity for work or play."

"Many disorders of the catarrhal type, such as asthma, hay-fever, bronchitis, colds, sinus [117] trouble, and discharge from the ears, are corrected more rapidly if daily treatment is given with the cold ultra-violet ray lamp."

"Many skin diseases, where fungi are present, such as barber's itch, ringworm, and impetigo, also disappear when the proper dosages of the rays are used. . . . Great improvement in cases of athlete's foot will quickly be noted."

". . . In acne, eczema, psoriasis, shingles and erysipelas, ultra-violet can often be used with marked benefit. The ultra-violet rays destroy

germs and also hasten the growth of new, clean tissue. . . .”

“Life Lite is indispensable for the home treatment of a great many skin diseases and for relieving many types of illness. It is without doubt the finest means of building up the general resistance, overcoming low vitality, and quickening convalescence of any known natural treatment.”

“Patients with anemia should receive ultra-violet light treatments in addition to dietary changes. The light-ray applications have a tendency to increase both the hemoglobin and red corpuscles of the blood.”

“You will find our quartz ultra-violet lamps to be the safest and most efficient on the market. The intensity is correctly regulated so that there is no danger of serious over-exposure.”

“These rays are absolutely necessary to vigorous, normal existence as well as a powerful aid in healing disease. It has been shown that the ultra-violet rays are one of the main factors which produce improved tone, increased resistance and better mental reaction. They tone up the nervous system and induce restful sleep by a regulatory influence on the metabolism in all cases showing a calcium and phosphorus deficiency.” [118]

“Quartz ultra-violet rays normalize body chemistry! Life Lite rebuilds your resistance

to colds, increases vitality and heals most skin diseases.”

“Skin Diseases, acne, eczema, psoriasis, sores, ulcers, infections, etc. Life Lite quartz ultra-violet lamps heal most skin diseases safely, quickly and easily at home.”

“Get your quota of sunlight with Life Lite
* * * clear up most of your chronic skin disorders
* * * build resistance against disease
* * * and relieve pain. Sufferers from psoriasis, acne, eczema, ulcers, and impetigo have obtained noticeable improvement after consistent use of Life Lite.”

Paragraph Four: Through the use of these representations and others of a similar nature the respondent has represented, directly or by implication, that its lamp is a sun lamp, and that the lamp will afford benefits to the skin and to the general health of the user comparable to those afforded by natural sunlight; that the use of the lamp constitutes a cure or remedy, or a competent and adequate treatment for asthma, hay fever, bronchitis, colds, sinus trouble, discharges from the ears, barber's itch, ringworm, athlete's foot, acne, eczema, psoriasis, shingles, erysipelas, anemia, sores and ulcers; that it stimulates the tissues of the skin; that it builds up in the body resistance to disease; that it produces a chemical reaction which keeps the blood stream in balance; that it aids in overcoming a deficiency of either white or red corpuscles; that it produces a tonic effect upon the blood; that it builds up the resistance of the body to infections;

that it stimulates the endocrine glands; that it quiets and soothes the nerves, particularly the nerve endings in the skin; that it acts as an antacid and has an alkalizing effect upon the body; that it improves metabolism; that it makes the body strong, increases vitality, and build new tissues; that it improves the general tone of the body and improves mental reactions; that it tones up the nervous system and induces sleep; that it normalizes the chemistry of the body and that it relieves pain.

Paragraph Five: Respondent's lamp is made in some seven different models, divided generally into [119] hand lamps and stand lamps, that is, lamps which are mounted upon a stand. With the exception of one or two of the models which are intended for use by physicians exclusively, the lamps are designed primarily for use by the general public for self-application in the home. The lamps are sold principally through dealers, except in the trade area around Los Angeles, where respondent contacts the purchasing public direct by means of sales agents.

The lamp is of the type known as the cold quartz lamp. The essential part of the device is a quartz tube, which contains a mixtre of certain gases, together with a small amount of mercury. The tube is hermetically sealed to prevent the escape of the gases, and to prevent the entrance into the tube of any air from the outside. When the tube is subjected to electric current the ionization of the mercury vapor results in the radiation from the tube of ultra-violet rays. Each lamp is equipped with a time clock for regulating the use of the lamp. This

clock may be set for such period of time as the user may desire, and upon the lapse of the fixed period of time the lamp is shut off automatically. The maximum period of time permitted by the time clock is six minutes.

Along with each lamp sold, respondent supplies to the purchaser a pair of goggles for use while the lamp is in operation. Printed instructions for the use of the lamp are also supplied by respondent to each purchaser, the pertinent portions of such instructions being, in the case of the hand lamp, as follows:

“Caution: Goggles must be worn to protect the eyes from sunburn all the time the light is on.

* * *

“Directions For Use

“Goggles are furnished with every lamp and it is vitally important to wear them as the ultra-violet rays will sunburn unprotected eyes which makes them inflamed and painful but [120] which causes no other harm or injury.

“Uncover the portion of the body to be exposed, as the passage of ultra-violet through clothing is very limited.

“Best results may be expected if your physician is consulted concerning frequency and length of treatment. This particularly applies to infants and children. Your physician is the proper guardian of your health.

* * *

“Treat the Abdomen

“The ultra-violet rays have very slight penetration and for this reason it is desirable to treat that part of the body in which the blood stream is closest to the surface. Best results are obtained by treating the abdomen and chest areas because 70 per cent of the blood that goes into the skin capillaries comes to the surface in these areas. It is advisable to take treatments in a warm room, as the blood will be closer to the surface of the body than when exposed to a chilly temperature. Under these conditions it is possible to receive a much better reaction than if the cold air is striking the skin and causing the blood to remain in the deeper tissues.

“Types of People

“Blonds and brunettes react differently to the ultra-violet. A brunette will usually require longer exposures while the fair-skinned blonde generally reacts readily. Age must also be considered; the very old and the very young demanding greater caution. Children up to four or five should be given shorter treatments and it is best to give the treatments in the mornings. Some adults also find it preferable to take treatments in the morning rather than in the evening because of the stimulative effect of the rays. [121]

“Treatments

“For a general body sunbath: Turn the

lamp on for one minute, hold the lamp about one-half inch from the skin and pass the lamp over the chest and stomach. One or two minutes distributed over the chest and stomach is enough for the first treatment. Infants, and young children, or very fair-skinned adults should be started at from one-quarter to one-half of the above exposure times. The time may be increased one minute each day until a light pinkish flush of the skin is obtained, which will show up about six hours after the treatment. Once the desired reaction is established, continue the daily treatments with this same length of time as long as the reddening continues. If the skin becomes accustomed to the rays the time may be increased until the desired effects are obtained.

“Keep The Light Moving

“Keep it moving slowly over the body all the time. This gives an even distribution of the rays and prevents spot sunburning. Never give a long enough treatment to get an extreme reaction; if you should, allow an interval of three or four days before the next treatment. One person may receive the beneficial effects of the ultra-violet rays in a two-minute or three-minute treatment, while another person will require a six-minute or seven-minute treatment over a selected area, such as the abdomen and chest. It is obvious that it is not the length of time that determines the treatments, but the re-

quired reaction through an amount sufficient to produce the slight reddening of the skin.

“It is important to use the lamp always at the same distance from the skin; for the intensity is greatly affected by a change in distance because the intensity varies inversely as the square of the distance.” [122]

The directions for the use of the stand lamp are identical with those for the hand lamp, except that the portion captioned “Treatments” reads as follows:

“For a general body sunbath use the lamp 20 to 24 inches from the body. The tube in this lamp is genuine quartz and the first treatment should be for not more than a one-minute exposure. The greater the distance, the longer the exposure, the ratio of distance and time being approximately proportional according to the inverse square law. Example: 2 minutes at 20 inches equals approximately 4 minutes at 30 inches.

“If it is desired to treat small areas of the body the lamp may be placed closer and the treatment time reduced accordingly. Infants and young children, or very fair skinned adults should be started at from one-quarter to one-half of the above exposure time.

“The time may be increased one minute each day until a light pinkish flush of the skin is obtained, which will show up about six hours after the treatment. Once the desired reaction

is established, continue the daily treatments with this same length of time as long as the reddening continues. If the skin becomes accustomed to the rays the time may be increased until the desired effects are obtained. Never give a long enough treatment to get an extreme reaction; if you should, allow an interval of three or four days before the next treatment. One person may receive the beneficial effects of the ultra-violet rays in a two-minute or three-minute treatment, while another person will require a six-minute or seven-minute treatment over a selected area, such as the abdomen and chest. It is obvious that it is not the length of time that determines the treatments, but the required reaction through an amount sufficient to produce the slight reddening of the skin.

“It is important to use the lamp always at the same distance from the skin for the [123] intensity is greatly affected by a change in distance.”

There is attached to each lamp, when sold, a large red tag, which reads as follows:

“Caution

“To be used only by or on the prescription of a physician fully licensed and qualified by training and experience in the use of ultra-violet radiation.

“A survey of accepted medical literature indicates that treatment of certain pathological

conditions with ultra-violet radiation may be harmful.

“In those conditions in which treatment is not contra-indicated, the physician will consider the type and extent of pathology present, and make such modifications of treatment as may be indicated.

“Treatment may be contra-indicated in the following conditions:

Active and progressive pulmonary tuberculosis.

Advanced heart disease without compensation or myocarditis in the aged.

Advanced arteriosclerosis.

Cross renal or hepatic insufficiency.

Certain types of generalized dermatitis.

Acute or chronic nephritis.

Diabetes, hyperthyroidism and photo-sensitization.

“Do Not expose the eyes to the direct light from this lamp. Wear suitable goggles.”

Paragraph Six: The unit of measurement for the wave length of light rays is the angstrom. The wave lengths of ultra-violet rays emitted from natural sunlight range from 2900 to 3900 angstrom units. Lamps which emit ultra-violet rays within this range [124] are known and designated by physicians and chemists as sun lamps, while lamps which emit ultra-violet rays of less than 2900 angstrom are known and designated as therapeutic lamps. The wave length of 89.2 per cent of the rays emitted by

respondent's lamp is approximately 2540 angstroms, and the lamp therefore is not a sun lamp but falls within the category of therapeutic lamps. The principal difference between the effects produced by the two types of lamp is that the rays emitted by the therapeutic lamp are more intense and consequently harsher and more irritating to the skin than those emitted by the sun lamp.

The benefits afforded by respondent's lamp to the skin and to the general health cannot properly be compared with those afforded by natural sunlight because of the wide variation between the rays emanating from the two sources. Those emitted from natural sunlight range from 2900 angstroms in the ultra-violet rays, as pointed out above, to approximately 50,000 angstrom in the infra-red rays.

Paragraph Seven: While ultra-violet rays of the wave length emitted by respondent's lamp possess bactericidal properties, such properties are effective only in those cases where the infection sought to be attacked is limited to the surface of the skin. The rays are incapable of penetrating the surface of the skin and destroying bacteria or fungi present below the surface. The use of respondent's lamp therefore does not constitute a cure or remedy or a competent or adequate treatment for such conditions as barber's itch, ringworm, athlete's foot, acne, eczema, psoriasis, shingles, or erysipelas, all of which are due to causes existing below the surface of the skin. In the case of sores and ulcers, the lamp may possibly stimulate the healing process but only in those

instances in which the infection causing the condition is confined to the surface of the skin.

The lamp possesses no therapeutic value in the treatment of asthma, hay fever, bronchitis, colds, sinus trouble, or discharges from the ears. It is likewise ineffectual in the treatment of anemia. It is incapable of building up in the body resistance to disease. It does not produce any chemical reaction [125] with respect to the blood stream, nor is it of any assistance in overcoming a deficiency of either white or red corpuscles. It has no tonic effect upon the blood. It is incapable of building up the body's resistance to infection or stimulating the endocrine glands. Aside from its irritating effect, the lamp affords no stimulation to the tissues of the skin.

The lamp has no therapeutic effect upon the nerves or upon the nerve endings in the skin. It does not act as an antacid and has no alkalizing effect upon the body. It is incapable of improving the general tone of the body, making the body strong, increasing vitality, or improving mental reactions. It does not tone up the nervous system or induce sleep. It does not relieve pain. The lamp is incapable of normalizing body chemistry or affecting metabolism, except insofar as its use may activate cholesterol in the skin, resulting in the production of Vitamin D and the consequent absorption and deposition of calcium and phosphorus in the tissues, particularly in the bone tissues. Likewise, any effect which the lamp may have with respect to the building of new tissues is limited to such effect as may result from the production of Vitamin D.

The Commission therefore finds that the representations made by respondent with respect to the therapeutic value of its lamp are erroneous and misleading, and constitute false advertisements.

Paragraph Eight: Unless used with due care, respondent's lamp possesses potentialities for injury to the user, in that excessive exposure to the lamp either with respect to proximity or length of time may result in severe erythema (sunburn). A further need for care in the use of the lamp arises by reason of the fact that certain types of persons are hypersensitive to ultra-violet rays, this being particularly true in the case of fair-skinned persons and young children. Moreover, certain types of skin disorders, particularly lupus erythematosus and some types of eczema, are aggravated rather than helped by ultra-violet rays. Such rays are also contra-indicated in the case of pellagra. [126]

Another of the principal dangers in the use of respondent's lamp is that unless suitable goggles are worn to protect the eyes from the ultra-violet rays the use of the lamp may result in severe conjunctivitis.

While the directions for use accompanying respondent's lamp contain certain cautionary statements with respect to some of the potential dangers in the use of the lamp, respondent's advertisements make no reference to any of such dangers, nor do they contain any reference to the cautionary statements appearing in the directions for use. The Commission therefore finds that respondent's advertisements are false for the further reason that

they fail to reveal facts material in the light of the representations contained therein, and fail to reveal that the use of respondent's lamp under the conditions prescribed in the advertisements or under such conditions as are customary or usual may result in substantial injury to the user.

Paragraph Nine: The Commission further finds that the use by the respondent of the false advertisements herein referred to has the tendency and capacity to mislead and deceive a substantial portion of the purchasing public into the erroneous and mistaken belief that respondent's lamp possesses therapeutic values which it does not in fact possess, and that such lamp is entirely safe for use in all cases, when such is not the fact, and the tendency and capacity to cause such portion of the public to purchase such lamp as a result of the erroneous and mistaken belief so engendered.

CONCLUSION

The acts and practices of the respondent as herein found are all to the prejudice of the public and constitute unfair and deceptive acts and practices in commerce within the intent and meaning of the Federal Trade Commission Act.

By the Commission.

Dated this 8th day of June, A. D., 1942.

[Seal]

GARLAND S. FERGUSON

Garland S. Ferguson,
Acting Chairman

Attest:

OTIS B. JOHNSON

Otis B. Johnson,
Secretary. [127]

[Title of Commission and Cause.]

ORDER TO CEASE AND DESIST

This proceeding having been heard by the Federal Trade Commission upon the complaint of the Commission, the answer of respondent, testimony and other evidence taken before a trial examiner of the Commission theretofore duly designated by it, in support of the allegations of said complaint and in opposition thereto, report of the trial examiner upon the evidence, briefs in support of and in opposition to the complaint, and oral argument, and the Commission having made its findings as to the facts and its conclusion that the respondent has violated the provisions of the Federal Trade Commission Act;

It Is Ordered that the respondent, Ultra-Violet Products, Inc., a corporation, and its officers, agents, representatives and employees, directly or through any corporate or other device, in connection with the offering for sale, sale or distribution of respondent's therapeutic lamp designated as "Life

Lite", or any other lamp of substantially similar construction, whether sold under the same name or any [128] other name, do forthwith cease and desist from directly or indirectly:

1. Disseminating or causing to be disseminated any advertisement by means of the United States mails or by any means in commerce, as "commerce" is defined in the Federal Trade Commission Act, which represents, directly or by implication,

(a) that said lamp is a sun lamp, or that it affords benefits to the skin or to the general health of the user comparable to those afforded by natural sunlight;

(b) that said lamp constitutes a cure or remedy or a competent or adequate treatment for barber's itch, ringworm, athlete's foot, acne, eczema, psoriasis, shingles, or erysipelas;

(c) that said lamp constitutes a cure or remedy for sores or ulcers, or that it constitutes a competent treatment therefor except insofar as it may stimulate the healing process in those cases in which the infection causing such conditions is confined to the surface of the skin;

(d) that said lamp possesses any therapeutic value in the treatment of asthma, hay fever, bronchitis, colds, sinus trouble, or discharges from the ears;

(e) that said lamp possesses any therapeutic value in the treatment of anemia;

(f) that said lamp builds up in the body resistance to disease;

(g) that said lamp has any tonic effect upon the blood, that it produces any chemical reaction with respect to the blood streams, or that it is of any [129] assistance in overcoming a deficiency of white or red corpuscles;

(h) that said lamp builds up the resistance of the body to infection, or that it stimulates the endocrine glands;

(i) that said lamp affords any stimulation to the tissues of the skin in excess of such stimulation as may result from its irritating effect;

(j) that said lamp quiets or soothes the nerves or the nerve endings in the skin;

(k) that said lamp acts as an antacid or has any alkalizing effect upon the body;

(l) that said lamp improves the general tone of the body, makes the body strong, increases vitality, or improves mental reaction;

(m) that said lamp tones up the nervous system, induces sleep, or relieves pain;

(n) that said lamp normalizes the chemistry of the body, improves metabolism, or builds new tissues, except insofar as its use may result in the production of Vitamin D.

2. Disseminating or causing to be disseminated any advertisement by means of the United States mails or by any means in commerce, as "commerce" is defined in the Federal Trade Commission Act, which fails to reveal that excessive exposure to said lamp either with respect to proximity or length of time may result in injury to the user; that said

lamp should not be used in the case of pellagra, lupus erythematosus, or certain types of exzema; and that said lamp should never be used unless goggles are worn to protect the eyes; provided, however, that such advertisement need contain only the statement, [130] "Caution: Use Only As Directed", if and when the directions for use, wherever they appear on the label, in the labeling, or both on the label and in the labeling, contain a warning to the above effect.

3. Disseminating or causing to be disseminated any advertisement by any means for the purpose of inducing, or which is likely to induce, directly or indirectly, the purchase in commerce, as "commerce" is defined in the Federal Trade Commission Act, of said lamp, which contains any representation prohibited in paragraph 1 hereof, or which fails to comply with the affirmative requirements set forth in paragraph 2 hereof.

It Is Further Ordered that the respondent shall, within sixty (60) days after service upon it of this order, file with the Commission a report in writing, setting forth in detail the manner and form in which it has complied with this order.

By the Commission.

[Seal]

OTIS B. JOHNSON

Otis B. Johnson,

Secretary. [131]

[Title of Commission and Cause.]

CERTIFICATE OF SECRETARY OF
FEDERAL TRADE COMMISSION

I, Otis B. Johnson, secretary of the Federal Trade Commission, and official custodian of its records, do hereby certify that transmitted herewith is a full, true, and complete transcript of proceedings had before the Federal Trade Commission in the above entitled matter, and separate original exhibit marked:

2-1

4407-1

That this transcript is certified to the United States Circuit Court of Appeals for the Ninth Circuit pursuant to the filing in said Court of a petition for review of an Order to Cease and Desist, dated June 8, 1942, entered by the Federal Trade Commission in the above indicated proceeding.

In witness whereof, I hereunto subscribe my name, and affix the seal of the said Federal Trade Commission, at its office in the City of Washington, D. C., this 24th day of May, A. D. 1943.

[Seal]

OTIS B. JOHNSON

Otis B. Johnson,

Secretary.

PROCEEDINGS

Trial Examiner Reardon: The hearing in the matter of Ultra-Violet Products, Inc., Docket No. 4407, is now convened at Los Angeles, California, at 10:00 a. m., Pacific Standard time, on the 28th day of May, 1941, in Room 255 of the Post Office Building.

Merle P. Lyon, Esq., of Washington, D. C., appears for the Commission; and Ernest A. Tolin, Esq., of 756 South Broadway—is that Los Angeles?

Mr. Tolin: Yes.

Trial Examiner Reardon: —Los Angeles, California, appears for the respondent. [2*]

THOMAS S. WARREN

was thereupon called as a witness for the Commission and, having been first duly sworn, testified as follows:

Direct Examination

By Mr. Lyon:

Q. Will you state your name and address, please?

A. Thomas S. Warren. Residence or business, you mean by “address”?

Q. Your home address?

A. 928 North Kingsley Drive, Los Angeles.

Q. What is your business or occupation?

A. General manager of the Ultra-Violet Products, Incorporated.

* Page numbering appearing at top of page of original Reporter's Transcript.

(Testimony of Thomas S. Warren.)

Q. What is the correct name of that company, Mr. Warren?

A. Ultra-Violet Products, Incorporated.

Q. And sometimes you use the words "Ultra-Violet Products, Inc."?

A. That is right.

Q. To designate the corporation?

A. I-n-c.

Q. And that is the respondent in this case?

A. Yes.

Q. What is your official position with that company?

A. President.

Q. How long have you held that position?

A. Since the incorporation in 1934,—in '33 or '34. [3]

Q. Will you state the nature of the business of Ultra-Violet Products, Inc.? What do they sell or distribute?

A. We manufacture ultra-violet lamps for health purposes, for sterilization purposes and for mining fluorescence.

Q. Three different purposes, is that it?

A. That is correct. [5]

Q. Now, just generally what are these other lamps that you sell?

A. We make ultra-violet lamps for sterilization purposes in meat boxes and refrigerators, in air conditioning rooms, air ducts, and bakeries, or any place where it is necessary for bactericidal purposes.

Q. And the mining lamps?

A. The mining lamps are used for the analysis

(Testimony of Thomas S. Warren.)

of ores; also used by criminal departments of police departments, and also in laboratories for chemical analysis of all kinds of materials. [6]

Q. Ultra-Violet Products, Inc. is a California corporation, is it? A. Yes.

Q. Is the statement in the letter that the time of incorporation was December 18, 1933, correct?

A. That is right. [54]

I started in business in November of 1932.

Q. Under your own name?

A. Under my own name.

Q. And as a private individual, without a partnership?

A. Purely as my own business, under the name of Ultra-Violet Home Products Company. Then in December of 1933 I incorporated the company.

[56]

Q. Will you state, generally, approximately how many of these Life Lite lamps you have been selling in recent years?

A. Since the company first started in 1932, I have sold approximately 2200 hand lamps, Life Lite lamps, and, oh, probably 1200 or 1500 stand type lamps, but not to exceed—well, I imagine about 1200 is correct. [57]

Q. Have you had any experience yourself personally with the use of these various types of Life Lite lamps? A. Yes, I have.

Q. What experience have you had?

A. Well, when I first started working with ultra-violet light in 1930, I wanted to find out what ef-

(Testimony of Thomas S. Warren.)

fect the light would have upon myself, and I started using it consistently in daily treatments.

[61]

I found that it seemed to give me a little more vitality or increase in my general health, which at that time wasn't any too good. I, for a number of years previous to that, had been subject to colds, had pneumonia a couple of times, and I found by using the lamp it built me up to where I had more resistance. I continued using that for two years, and used it very regularly.

Q. What lamp was this?

A. The Life Lite lamp. The Life Lite lamp from 1932, but prior to that I used a lamp which I had called the Z-Ray. It was a cold quartz lamp.

Q. And it was after that you started putting it out under the name of Life Lite?

A. I was working for another company at that time.

Q. I see.

A. I found in my own personal experience, with the two years continuous use of the lamp, that it built up my resistance to where I went through four years without any colds or any sickness or illness of any kind.

Mr. Lyon: Just a minute. I object——

The Witness: I continued——

Mr. Lyon: Just a minute. I object to the portion of the witness' answer, where he said the use of the lamp built his health up. I think he can

(Testimony of Thomas S. Warren.)

state just what happened, but not so far as any particular cause for that is concerned. [62]

Trial Examiner Reardon: You object to what he found, but he may state the facts and it is understood that he stated the facts that he observed after his use, that he had no colds whatever.

Mr. Lyon: Yes, but I think that the witness' answer is really not responsive to the question that was originally asked. I asked the witness what experience he had had with the use of this particular lamp.

The Witness: All right.

Mr. Lyon: And I think stating the results that were obtained would not be responsive.

Mr. Tolin: That is a part of the experience.

Trial Examiner Reardon: I will let the answer stand, on the ground that it is admitted solely to show that he used the lamp, and what he said he found out after was the observation as to his condition subsequent to the use of the lamp.

Q. In your further testimony——

Mr. Tolin: I think he should be allowed to finish his answer before you proceed.

Trial Examiner Reardon: Yes, he should be allowed [63] to finish his answer.

By Mr. Lyon:

Q. Go ahead and finish your answer then, Mr. Warren.

A. I used the lamp regularly for at least a period of two years. From that time on I was not

(Testimony of Thomas S. Warren.)

so constant in using it, using it for a matter of a month or so at a time and then ceasing for a matter of several months, and during the following four years from the time that I used it so very regularly, I had no colds and was not in a run down condition and felt that the lamp was the cause for the reaction.

Trial Examiner Reardon: What was that?

Mr. Lyon: I object to the last statement.

The Witness: In my opinion, the reason for my improved health was directly due to the light, because that was the only means used.

Trial Examiner Reardon: I sustain a motion to strike the reason for his improved health.

Mr. Lyon: It is a conclusion and opinion of the witness.

The Witness (Continuing): I have also used the light a number of times for treating athlete's foot condition on my own feet, and I have cleared it up every summer when the condition has occurred.

Mr. Lyon: I object to that.

Trial Examiner Reardon: I will have to grant the [64] motion. You say "I have cleared it up,"——

The Witness: I have relieved it.

Trial Examiner Reardon: As inferring that it was cleared up by the use of the lamp. You may testify after you have used the thing what you observed, and whether you observed something that was there before or not.

(Testimony of Thomas S. Warren.)

The Witness: I observed the fact that my toes had a very red condition, that there was a moist serum being given off from the cracks in between the toes, and they were very red and inflamed, and after I used the lamp—I let the condition exist for a time to give it a thorough test with the Life Lite lamp, and I used it twice a day for a period of probably four or five days, and at the end of that time I observed that the condition between the toes had returned to very nearly normal, that the cracks had disappeared, the skin was nice and smooth and that the redness was gradually going away.

By Mr. Lyon:

Q. What model did you use in those treatments?

A. Model A Life Lite hand lamp.

Q. How far from the body did you hold the lamp?

A. I held the lamp as close to the skin as I could, and I gave myself treatments of from ten to fifteen seconds.

Q. Would you say that was about one inch?

A. In that particular case it was closer, because I got it [65] as close as I could.

Q. Is that the recommended distance to be used for the hand lamp?

A. The hand lamp, in accordance with the directions and instructions, is to be held about one inch away, as you will find there.

Q. From your experience, Mr. Warren, how long did you find it took to produce an erythema on the skin?

(Testimony of Thomas S. Warren.)

A. What part of the body are you talking about?

Q. Well, from the use of a hand lamp, taking any part of the body that you have had experience with.

A. I have had experience with all parts of the body.

Q. All right. Will you tell us what period of time it takes for different portions of the body, to produce an erythema?

A. On the forearm, the underside of the forearm, a person can get an erythema, say, on myself or on the average individual in a ten or twelve second exposure with a lamp at a one inch distance.

[66]

Q. That is continually moving the lamp?

A. Not in that particular case, no. You can get it just by holding it about a one inch distance from the underside of the forearm, —you can get a first degree erythema in about a ten second period of time.

Q. Now, this production of erythema you would say would be in about ten to twelve seconds on the forearm?

A. That is right.

Q. Would there be any difference on other parts of the body? [67]

A. Yes, definitely so. It is next to impossible to get an erythema on the bottom of the foot or on the hands, for instance. You can take an exposure or ten or fifteen minutes without getting an erythema, because of the thickness of the skin.

(Testimony of Thomas S. Warren.)

Q. Now, for the sake of the record, will you tell us just exactly what an erythema is?

A. An erythema is a redness, or is commonly a sun burn condition, which shows up from two to six hours following exposure to the ultra-violet rays.

Q. It would be the same as sun burn, or what is known as sun burn?

A. Identically the same.

Q. That is the medical term for sun burn; is that right? A. Yes.

Q. Now, you have been talking so far about the hand lamp. Is there any difference in the use of the stand lamp with reference to the distance away from the body?

Mr. Tolin: To which we object on the ground that the instruction sheets are the best evidence. There is no evidence that this witness goes about and gives instructions to the persons who purchase the lamps, other than the enclosure of a printed sheet which we already have in the record. [68]

By Mr. Lyon:

Q. I show you Commission's Exhibits 5, 6 and 7, and ask you if these are all with reference to stand lamps, directions for use with reference to those particular types of lamps? A. That is right.

Q. Calling your attention to the paragraph marked, "Treatments," reading as follows:

"For a general body sun bath use the lamp 20 to 24 inches from the body."

(Testimony of Thomas S. Warren.)

Is that the general instruction given for the use of these lamps, so far as the distance from the body is concerned, in all cases?

Mr. Tolin: Objected to on the ground that the instruction sheet itself is the best evidence.

Mr. Lyon: Well, I am calling his attention to the instruction sheet.

Trial Examiner Reardon: Will you read the question, please?

(The question was read by the reporter.)

Trial Examiner Reardon: You referred to those exhibits?

Mr. Lyon: Yes, that is right.

Trial Examiner Reardon: And those exhibits contain the instructions? [69]

Mr. Lyon: That is right.

Trial Examiner Reardon: Those are the only instructions—or, are there any other instructions?

The Witness: No.

Trial Examiner Reardon: Well, that is the answer.

By Mr. Lyon:

Q. Those are the instructions, that I have read to you? A. That is right.

Q. Now, have you tried any of those stand lamps on your own body? A. Yes.

Q. From your experience with those particular types of lamps, what would be the erythema time by the recommended use of those lamps 20 to 24 inches from the body?

(Testimony of Thomas S. Warren.)

A. Well, with a Budget Model lamp a person will get an erythema at a 20 to 24 inch distance in about, oh, one and one-half to two minutes, and with the Model M they would secure an erythema in about a one to one and one-half minute treatment time.

You see, it is very difficult to say positively, because the skin of different individuals varies so greatly that no two react exactly the same. For that reason we generally put in the instructions a one minute maximum for the first exposure.

The same is true with the Model H7. The erythema time [70] for the average untreated individual would probably be about a minute.

Q. You mean by that that if an individual has never before used a lamp of this sort, that it would take one minute to produce a perceptible erythema?

A. No. I don't care whether they have used it before or not, but if they haven't used it in the past few months.

Q. And by "untreated" individual, do you mean one whose skin is untanned——

A. That is right.

Q. ——in the natural condition?

A. The normal condition without—well, we wear clothes and when our skin is in a different condition than if we didn't wear clothes, and in its normal condition.

Q. And the skin not tanned by the sun or any other kind of tanning? A. That is right.

Q. Either by the lamp or by natural sun light?

(Testimony of Thomas S. Warren.)

A. Yes.

Trial Examiner Reardon: This is off the record.

(There was a discussion off the record.)

Trial Examiner Reardon: On the record.

By Mr. Lyon:

Q. You say the minimum time would be one minute? A. Yes. [71]

Q. That would be the absolute minimum for the average individual?

A. They should use it that long. That is the minimum period of time for which they use it.

Q. Yes. Ordinarily, you recommend a little longer time?

A. No. I recommend the one minute, as you follow in the instructions. They can increase the time as they feel it necessary in their own individual cases.

Q. Now, these other times that you gave, the one and one-half to two minutes, with the Budget lamp, that would be a longer period of time, would it?

A. Yes, because it is not as strong a light.

Q. That is, all of these different types vary in intensity of light?

A. And they are all controlled by automatic time clocks.

Q. How do those automatic time clocks run?

A. You set the clock for the period of time you want it to run, and then after the clock has been set it automatically turns on the light at the same

(Testimony of Thomas S. Warren.)

time, and then when the time has expired the clock turns off the light, so you get exactly what you set it for. And the maximum time limit for the clock is six minutes.

Q. You mean by that it cannot possibly go for any more than six minutes?

A. That is right. [72]

Q. If a person wants to have it on for any less than that, he has to regulate it?

A. You can set it for one minute, or a half a minute, or two or three minutes, or any other period of time up to six minutes.

Q. And that is true of all of these lamps, the hand lamps?

A. That is right. Each Life Lite lamp is equipped with a time clock.

Q. I notice that *the* you recommend that the first treatment should be not more than one minute. Is that correct?

A. That is right.

Q. And that is increased, the time is increased as the patient continues to use the lamp?

A. As their tolerance for the ultra-violet increases or as their body indicates they can increase the time, but the one minute is less than the minimum amount anybody would ordinarily need, but it is the best and safest treatment time to start with. Most people increase the time gradually so that by the end of a month they are taking five or six minutes. [73]

Q. Now, will you state how these lamps are con-

(Testimony of Thomas S. Warren.)

structed, Mr. Warren? As to the construction of these lamps, how are they made up?

A. You are talking about the quartz tube? [78]

Q. Yes.

A. You don't mean about the stand and the mechanical features?

Q. I want to find out what produces the results.

A. That is the quartz tube.

Q. That is what I want to find out.

A. The quartz tube is a genuine fused quartz tube, bent into the shape desired. It is exhausted of all gases and thoroughly cleaned of all gases, and then filled with a mixture of helium, argon, neon and krypton to a pressure of about 15 millimeters.

There is then added a small amount of mercury, two or three little drops, and the tube is sealed off the pump, and usually it is hermetically sealed. There is no air from the outside can get into it and nothing from the inside can get out except the radiations which are transmitted through the quartz tube.

Now, when that tube is ionized by high voltage of low milliamp., we find the ionization of the mercury vapor inside produces a high intensity of ultra-violet light, which is primarily located in the spectral range of 2537 angstrom units.

Q. This is known as a cold quartz type of ultra-violet lamp? A. That is right.

Q. How does that differ from the hot quartz type? [79]

A. The old hot quartz lamp was a tube that was

(Testimony of Thomas S. Warren.)

six to eight inches long, had a great deal of mercury in it, with three electrodes, and the principle was a low voltage, high amperage electrical arc between the electrodes, and this type of discharge gave a high intensity in the ultra-violet region, far more intense than you can secure per inch from the cold quartz type of tube, and although it emitted ultra-violet rays of very high intensity in this wave length, they were partially absorbed in the vapor before it is transmitted through the quartz, so that they have a higher intensity and they also produce a greater number of bands in the ultra-violet region.

Q. Now, there are other types of ultra-violet lamps, are there?

A. There is the bulb type and also the carbon lamp.

Q. By the way, what technical experience have you had in connection with the making of these?

A. With the making of these?

Q. Yes.

A. I have made tests on the different wave lengths in the different ranges. I have cooperated with laboratories and doctors and in bactericidal tests. I have read every book I could lay my hands on in the last ten years on the subject of Ultra-Violet, and I have had a lot of experience in addition to that. [80]

Q. What is your education?

A. I graduated from Pomona College, taking a course that was generally divided between sci-

(Testimony of Thomas S. Warren.)

ence and general economics, and I had had a very short course from the National School of Physiotherapy, graduating from that in 1931.

Q. And where is that located?

A. Here in Los Angeles. I think it is out of business now. They changed their name, or something.

Q. Your only business has been with the ultra-violet lamps; is that right?

A. No, I have been in other businesses prior to this.

Q. You say you graduated from the National School of Physiotherapy in 1931?

A. Yes. That was a night school course.

Q. That was while you were engaged in other work?

A. Yes.

Q. And you graduated from college when?

A. In 1926.

Q. You have had no other experience or education in this particular type of product, other than you have told us?

A. Well, I worked with one of the men in the physiotherapy department in the County Hospital very constantly for six months. I was with a company at that time that was preparing to go into the manufacture of ultra-violet lamps for dental and medical purposes, and they gave me the full charge of [81] the department, and I was to learn everything that I could, and I spent a great deal of time in some of the hospitals and with the doc-

(Testimony of Thomas S. Warren.)

tors, building up a foundation on which to lay this work.

Q. But you never had any medical training or experience?

A. No, not as far as schooling is concerned.

Q. Did you have any training or experience in using an ultra-violet lamp on other people?

A. Yes, I have, on my own family.

Q. On your own family?

A. That is right.

Q. Have you used it on individual customers, other than your own family?

A. No, sir; except I did nine or ten years ago, under the supervision of a doctor in a couple of doctors' offices, following the instructions of the doctor on some of his own patients.

Q. Now, from your study and experience with reference to sun lamps and therapeutic lamps, would you say that there was an established minimum distance in connection with the use of the lamp, from which to figure erythema time? Would you say that 20 to 24 inches would be the standard, or a distance more than that?

A. I have used that as an arbitrary standard for the stand type lamps. With the hand lamps, it is about a one [82] inch distance.

Q. Isn't it a fact that 30 inches is the standard distance?

A. That is with a bulb type lamp, not a cold quartz type lamp. I think you will find that most

(Testimony of Thomas S. Warren.)

physicians using a cold quartz lamp either use it at a 16 inch distance or about an 18 inch distance.

Q. Well, is 30 inches given ordinarily as a standard from which to determine erythema time?

A. On the bulb type lamp, yes.

Q. How about the cold quartz type lamp?

A. For comparative measurements, but not for treatment purposes.

Q. Just for comparative measurements?

A. That is right.

Q. Now, for comparative measurements on the 30 inch basis, what would you say the minimum perceptible erythema time would be for the use of your stand lamps? A. I don't know.

Q. Calling your attention to the statement in Commission's Exhibit 41-B:

"The minimum perceptible erythema time at 30 inch distance for the Model K is approximately one and one-half minutes; for the Model J one and one-fourth minutes, for the Model M one minute, and the Model IU three-fourths minutes, and the Model P [83] 20 to 30 seconds."

Would you say that that was correct, so far as those particular types of lamps are concerned?

A. Yes. I have told you about the distance of 20 to 24 inches, and this mentions 30 inches.

Q. These lamps are all designed for use at 20 to 24 inches, rather than 30 inches; is that correct?

A. Yes, because it takes too long a time if you are going to have them at 30 inches.

(Testimony of Thomas S. Warren.)

Q. I show you Commission's Exhibit 42, for identification, Mr. Warren, and ask you if you wrote that letter?

(Handing document to witness.)

A. This has reference to the Model A hand lamp only, although it doesn't say so.

Q. You wrote the letter though?

A. That is correct.

Mr. Lyon: I offer this in evidence as Commission's Exhibit 42.

Trial Examiner Reardon: Any objection?

Mr. Tolin: No.

Trial Examiner Reardon: There being no objection, mark it in evidence as Commission's Exhibit 42.

(The letter heretofore marked "Commission's Exhibit 42", for identification, was received in evidence.) [84]

By Mr. Lyon:

Q. Now, you say that this letter refers only to the Model A hand lamp?

A. That is right.

Q. Would the figures given in this letter be any different for your other types of lamps?

A. Very definitely.

Q. Will you state what difference there would be? A. What figures?

Q. The wave lengths, percentage of wave lengths.

A. No, identically the same, so far as that is concerned.

(Testimony of Thomas S. Warren.)

Q. I call your attention to the statement in this letter, as follows: "The spectral range of the Life Lite lamp is exactly the same as that for any standard cold quartz unit, and is as follows:

"Wave length, 2540, 89.2 per cent; wave length 2960 to 3020, .6 per cent; wave length, 3132, 1.8 per cent; wave length, 3660, 1.5 per cent; visible light and heat, 6.9 per cent."

Now, what are referred to there in those numbers, Mr. Warren?

A. Which numbers, the per cent or the——

Q. No, the first numbers I referred to.

A. The angstrom unit wave lengths.

Q. Those are angstrom units? [85]

A. Yes.

Q. And what is an angstrom unit?

A. One fifty-second millionth of an inch.

Q. How is it used?

A. Used as a basis for measurement of visible and ultra-violet radiation, or it is one of the units of measurement for the electromagnetic spectrum.

Q. Yes, that is right. And the statement in this letter that 89.2 per cent of the wave lengths in the Life Lite lamp consist of wave lengths of 2540 angstrom units is correct, is it not?

A. No, 89.6 per cent.

Q. 89.2?

A. 89.2 per cent of the energy from the range is at that wave length.

Q. What is that distinction?

A. You see, 89.2 per cent of the wave lengths——

(Testimony of Thomas S. Warren.)

Q. Of the energy from the wave lengths?

A. Total energy of the output of the lamp is concentrated at that point.

Q. I see. What do you mean by "spectral range"?

A. That is the band or region over which you secure radiation from the particular lamp you are using.

Q. Do you know what the spectral range of the sun is, the natural sun light? [86]

A. Very closely.

Q. What is it?

A. It ranges from 2910 angstrom units to approximately 20,000, I believe, angstrom units.

Q. And the wave lengths in your Life Lite lamps are practically all less than that spectral range?

A. Yes, 89.2 per cent is below that point, yes.

Q. That is right.

A. But that does not mean very much.

Q. Now, you say that the statements in Commission's Exhibit 42 were all with reference to the hand lamp?

A. That is right.

Q. Model A? A. Yes.

Q. And your statement is then that that lamp would produce a perceptible erythema in 15 minutes at a 24 inch distance?

A. No, I think I said 60 minutes, didn't I? Isn't that the question they asked me?

Q. Well, I will show you this letter to refresh your memory. A. Yes.

(Handing document to witness.)

(Testimony of Thomas S. Warren.)

A. Oh, yes. It produces a far more than a perceptible erythema in 60 minutes at a 24 inch distance.

Q. And in your opinion, would it produce a perceptible erythema in 15 minutes at a 24 inch distance? [87]

A. That is right.

Q. But you recommend this only to be used at a one-inch distance?

A. Yes, very definitely.

Q. At that distance it would——

A. The intensity varies inversely to the square of the distance.

Q. I believe you stated previously that for the recommended distance of one inch it would produce an erythema in ten to twelve seconds?

A. On the underpart of the forearm.

Q. Why do you specify the underpart of the forearm?

A. Because that is used as a testing basis. For a person, an individual, you wouldn't consider that except for test purposes. People treat themselves ordinarily on the stomach or chest, not on the forearm.

Q. You think that the underside of the forearm would be more sensitive than any other part of the body?

A. It is as sensitive as any other part of the body.

Q. Would it be as sensitive as the chest or stomach?

A. No. The stomach is less sensitive. The inside of the thigh is equally as sensitive. The under-

(Testimony of Thomas S. Warren.)

part of a woman's breast is as sensitive, but all other parts of the body are less sensitive.

Q. Would you say that at a 30 inch distance your various [88] models of stand lamps would produce a perceptible erythema in times varying from one minute to one and one-half minutes? Would that be approximately correct?

A. Yes, on the average individual, I would say so.

Q. Would it possibly be any less than one minute?

A. There are certain very thin skinned, red headed individuals, whose reaction to ultra-violet is—well, they can hardly stand out in the sun light. Most of them know about it and realize what they get, know their sensitivity, and are careful. In fact, most of them don't have to be told.

Q. And that varies also in whether a person is a blonde or a brunette?

A. As an average individual, I refer to an average brunette, not a blonde.

Q. And the blondes are more susceptible?

A. That is correct, and so stated in the instruction sheet.

Q. It would take less rays of the lamp to produce a corresponding sun burn on a blonde than on a brunette?

A. Yes.

Q. And your instructions are based on the average brunette; is that correct?

A. That is correct.

(Testimony of Thomas S. Warren.)

Q. Now, do you recognize the distinction between a sun lamp and a therapeutic lamp?

A. I have read the distinction that is given as the opinion [89] of medical authorities, yes.

Q. And is that your opinion also?

A. Probably should be.

Q. What is that distinction?

A. That lamps which produce a radiation above 2800 or 2900 angstrom units are considered sun lamps, and those producing radiation shorter than that are considered therapeutic lamps. It is a very arbitrary method of standardization.

Q. That is, the rays of the sun are in the spectral range of more than 2900 angstrom units; is that correct? A. Yes.

Q. And they vary from that up to about how much, would you say?

A. Roughly, about,—I believe it is about 20,000 angstrom units.

Q. Well, isn't it true that they vary generally from 2900 to only approximately 3130 angstrom units?

A. We are talking about ultra-violet?

Q. Yes, the ultra-violet rays of the sun.

A. The ultra-violet rays of the sun begin at 2900 and go continuously clear on through the whole ultra-violet range.

Q. Do you not make a distinction between the ultra-violet spectrum and the sun's rays?

A. Yes.

Q. What distinction? [90]

(Testimony of Thomas S. Warren.)

A. The ultra-violet is only about—from 4000 angstrom units, which is the upper limit of the ultra-violet region. That is where the limit of visible light is, and from there on is the ultra-violet region, and the ultra-violet region between 4,000 and 3,200 is apparently negative so far as actinic or chemical effects on the human body are concerned. From 3200 to 2900 they start getting chemical effects from the ultra-violet rays, and you continue those same ultra-violet effects in the shorter regions. It does not make any difference whether the sun's rays stop there or not. That has nothing to do with it.

Q. I am just asking if you know there is a distinction so far as the sun's rays are concerned.

A. There is a distinction only in so far as the American Medical Association has said there is.

Q. I believe you stated that was your opinion also?

A. No. I stated the distinction, that possibly there should be a distinction between lamps of longer wave lengths, and those producing shorter wave lengths. I think that is all right.

Q. That is, there is a distinction between a sun lamp and a therapeutic lamp?

A. Yes, on the basis of that definition, and the definition is probably all right.

Q. And the definition you refer to is that the ultra-violet [91] rays of the sun are in a spectral range from 2900 to approximately 3200 angstrom units?

A. Those are the actinic rays.

(Testimony of Thomas S. Warren.)

Q. The actinic rays?

A. The chemically acting rays.

Q. And there are some other rays that do not have——

A. There are other ultra-violet rays that have no effect on the human body, so far as I know.

Q. As far as the sun is concerned, the only rays that have any effect are between 2900 angstrom units and approximately 3200?

A. No. The only ultra-violet rays from the sun that have any effect on the body——

Q. I mean, the ultra-violet rays. A. Yes.

Q. You will have to excuse me for not being a technical expert along this line.

A. That is all right.

Q. I believe you state in your literature that your lamps are therapeutic lamps; is that correct?

A. We have tried to do that all the time. Once in a while we slipped up in one or two places, but it has not been our intention to classify them as a sun lamp at any time.

Q. You do not at the present time make any claim that you have a sun lamp? [92]

A. No, not a bit; neither verbal, nor written, nor in any way.

Q. Would you know what the standard of the American Medical Association is with reference to the sun lamp? That is, what kind of a lamp should be classified as a sun lamp, based upon the time of erythema and the distance at which the lamp is to be used?

(Testimony of Thomas S. Warren.)

A. I can't give you that exactly, and I would rather not.

Q. Yes.

A. I have the information in my files, but not in my mind.

Q. Now, Mr. Warren, will you state what the reason, if any, is for the differentiation between a sun lamp and a therapeutic lamp? Why is there that distinction made, do you know?

A. The reason that it is made is, I think, largely a commercial reason. The results from the therapeutic rays shorter than sunlight, or the therapeutic rays larger than the limits of the sunlight spectrum are more or less the same, depending on the intensity from the different wave lengths. The reason that there is the distinction, and the reason for the distinction, I think, is so that certain light sources which duplicate—not duplicate, because none of them duplicate, but certain light sources that have the highest intensity in the wave lengths similar to the bands we receive from sunlight are ones which give—well, they just more nearly resemble the sunlight than the lamps [93] producing shorter waves. There is no reason why they should not be called sun lamps. There is no reason why the lamps producing shorter wave lengths cannot give the same results either.

Q. Well, is it or is it not a fact that the shorter the wave lengths the less time it takes to produce a perceptible erythema of the skin?

(Testimony of Thomas S. Warren.)

A. That is true.

Q. Would it be true that a sun lamp would be less severe on the skin, have a less severe action than a therapeutic lamp?

A. No, not a bit. What difference does it make whether it takes two minutes or it takes 15 minutes?

Q. It would take a longer time to get the same result from a sun lamp, is that right, than a therapeutic lamp?

A. Yes.

Q. Isn't it true that the minimum time in which a person can obtain a perceptible erythema from the use of a sun lamp would be an hour?

A. That is what the American Medical Association thinks, but I don't have to agree with them.

Q. But is that your personal opinion?

A. No.

Q. That is the recognized standard, is it not?

A. That is what they have tried to establish as the [94] recognized standard.

Q. And anything less than that time is classified as a therapeutic lamp rather than a sun lamp?

A. No, I don't think so, because you have your Burdick lamp, which is classified as a sun lamp, and you can get a perceptible erythema from the Burdick lamp, or from the G.E. bulb lamp and you will have quite an erythema in five minutes. And the Hanovia sun lamp produces the very short wave lengths and therapeutic bands, just like the cold quartz, and will give you a perceptible erythema in one to two minutes.

(Testimony of Thomas S. Warren.)

Q. Are your lamps designed for use without the supervision of a physician?

A. We believe so, yes.

Q. That is, they are designed for use in the home by the average individual, without having any particular medical training?

A. I think they are perfectly so.

Q. And you recommend them for that use?

A. I would be glad to. [95]

DR. SAMUEL AYRES, JR.

was thereupon called as a witness for the Commission, and, having been first duly sworn, testified as follows:

Direct Examination [97]

Q. Will you state your name, please?

Trial Examiner Reardon: Just a minute. This witness is called out of order, the cross examination of the previous witness having been deferred.

Mr. Lyon: That is correct.

Trial Examiner Reardon: Now, the question is your name.

The Witness: Samuel Ayres, Jr.

By Mr. Lyon:

Q. Where do you live, Doctor Ayres?

A. 4657 El Camino Corto, LaCanada.

Q. What is your profession?

A. Physician.

(Testimony of Dr. Samuel Ayres, Jr.)

Q. Will you state in as much detail, as you care to, your experience and education as a physician?

A. A.B., University of Missouri, 1915; M.D., Harvard Medical School in 1919; interneship, Massachusetts General Hospital; graduate assistant in dermatology, six months at the Massachusetts General Hospital; practiced in Los Angeles, limited to diseases of the skin, since October 1920.

Q. You have been practicing here as a specialist in skin diseases since 1920; is that correct? [98]

A. That is right.

Q. Now, Doctor, for your information, the product involved in this case is known as a Life Lite Lamp, L-i-f-e L-i-t-e, the trade name, and is a cold quartz type of lamp, in which a mercury are is burned in quartz. Are you familiar with that type of lamp? A. Yes.

Q. Will you state what experience, if any, you have had with the use of such a lamp?

A. I have employed a lamp of that type in my own practice for a period of approximately eight or ten years, or about as long as that particular type of lamp has been manufactured. I have forgotten the exact time in which I used it for the treatment of certain skin diseases.

Q. Now, for your further information, it has been testified that the respondent company produces and sells two general types of lamps; one, a hand lamp, and the other a stand lamp, and I show you the directions for the use of one type of hand lamp which is in evidence as Commission's Exhibit 1, and

(Testimony of Dr. Samuel Ayres, Jr.)

ask you to base your testimony on the assumption that the lamp is used under those directions.

Mr. Tolin: Do you mind if I read over your shoulder, Doctor?

The Witness: Not at all. Now, what was your question? [99]

Trial Examiner Reardon: Read it, please.

(The question was read by the reporter.)

By Mr. Lyon:

Q. That was simply a remark to the effect that those are the directions for the use of this particular lamp. A. Yes.

Q. And the directions for the use of the stand lamps are similar, with the exception of the distance from the body at which they are to be used, and the directions are 20 to 24 inches in the case of the stand lamp, and one inch from the body in the case of the hand lamp. Assume also for your testimony, Doctor, that the wave lengths of the ultra-violet rays produced by this lamp are as follows: 2540 angstrom units comprise 89.2 per cent of the spectral range of the lamp; 2960 to 3020 angstrom units, .6 per cent; 3132 angstrom units, 1.8 per cent; 3660 angstrom units, 1.5 per cent; visible light and heat, 6.9 per cent.

Now, having those various facts in mind, what would you say would be the effect of such a lamp, used as directed, upon the skin of the average individual?

A. Oh, I think as the increase of the time element came into play, there would probably be a cer-

(Testimony of Dr. Samuel Ayres, Jr.)

tain degree of redness of the skin. I would say that probably would depend on how long the lamp was held at any one particular point.

Q. I might say that the directions call for the moving of [100] the lamp over the skin in a continuous movement.

A. For one to two minutes.

Q. Yes, for not more than six minutes at any one particular time.

A. Yes. There might be perhaps a very slight redness. It would depend somewhat upon the sensitivity of the skin, but I would estimate to start with that a time of one to two minutes, moving the lamp continuously over the chest and abdomen, might be enough to produce a very faint pink color.

Q. Would you say that such a lamp would be a sun lamp or a therapeutic lamp?

A. I would say it would be a therapeutic lamp.

Q. And for what reason?

A. Well, because it doesn't contain the full spectral range that the sunlight, the natural sunlight would produce.

Q. And what is the spectral range of the sun?

A. I don't recall the full spectral range, but it has a much—includes many more of the longer wave lengths than this general type of lamp would give.

Q. Are the shorter wave lengths harsher in their effect on the skin than the longer wave lengths?

A. Yes, the shorter wave lengths produce the redness or erythema, and with that type of lamp

(Testimony of Dr. Samuel Ayres, Jr.)

you don't get, as a rule, the tanning that you get with the full spectrum as [101] given by the sun.

[102]

Q. What experience have you had in the general field of medicine?

A. My work was entirely limited to skin diseases, other than my training period.

Q. All right. I will withdraw that question. Would you say that such a lamp would give benefits to the skin and to the general health of the individual, comparable to that given by general sunlight?

Mr. Tolin: Objected to on the same ground as the last question.

By Mr. Lyon:

Q. I will confine the question, first, to the benefits to the skin.

A. No, I don't think it would.

Q. In your opinion, would it give a benefit to the general health of the individual, comparable to that given by natural sunlight?

Mr. Tolin: That is objected to on the ground that the witness has testified that his practice is limited and [104] has been limited since his training period to dermatology, which is a specialty and does not concern the general health of the subject. Hence, he has shown himself not to be qualified to express an opinion upon the effect of this light upon general health.

Trial Examiner Reardon: Off the record.

(There was a discussion off the record.)

(Testimony of Dr. Samuel Ayres, Jr.)

Trial Examiner Reardon: I will overrule the objection.

Mr. Tolin: Then I will object to it on the ground that it does not appear that the witness has ever used or studied ultra-violet light with respect to the general practice of medicine. He has testified that lights of this kind came to his attention when they first came out some eight or ten years ago, that he took an M.D. degree at Harvard in 1919, which would have been prior to that date, and that in his entire practice he has been limited to dermatology, and hence that the advent of this product, within his own testimony, has come about since he has had study or instruction or practice in the field of general therapy.

Trial Examiner Reardon: Well, he has testified to his familiarity with the appliance in question, and I will overrule the objection.

You may answer. [105]

Mr. Lyon: Will you read the last question again, please?

(The question was read by the reporter.)

The Witness: From direct personal observation, I am not able to answer the question, but from general impression and from literature, I would say that it probably has not the same effect that you would get from the sunlight, in particular, that you lack the tanning procedure, and that is considered to be intimately connected with certain of the benefits of the natural sun.

Mr. Tolin: I move to strike the answer upon the

(Testimony of Dr. Samuel Ayres, Jr.)

ground that by the witness' testimony it is based upon hearsay and speculation.

Mr. Lyon: It is based on his general knowledge, I understand.

Trial Examiner Reardon: I think on his qualifications, I will have to deny the motion.

By Mr. Lyon:

Q. Would you say that such a device would have any therapeutic value to the doctor?

A. Yes, I think a very definite one.

Q. What would be the therapeutic value of such a device?

A. This particular type of a lamp I think is useful in the treatment of several skin diseases. I think it has a very limited field of usefulness, but I think it is parti- [106] cularly beneficial where one desires to secure a prompt erythema without peeling, such, for instance, as in the treatment of alopecia areata or pityriasis rosea, and perhaps some masses of psoriasis.

I think it is useful and could be used in certain types of superficial eruptions due to bacteria, but I don't believe the light by itself is likely to produce a cure in conditions like psoriasis or eczema or athlete's foot, or things of that sort.

Q. So far as its bactericidal action is concerned, what would that be confined to, if anything?

A. Chiefly——

Q. To what?

A. Chiefly, staphylococcus, and that type of bacteria which is right at the very surface of the skin.

(Testimony of Dr. Samuel Ayres, Jr.)

Q. To surface bacteria?

A. Surface bacteria, yes.

Q. In your opinion, would it be of any value in the treatment of chronic skin infections?

A. I think it again has a limited field of usefulness in such chronic—you say “skin infections” or “affections”?

Q. Infections.

A. Infections. I don't know of any chronic skin condition which would be improved by it or benefited by it other than perhaps a stimulating effect, such as perhaps in the [107] case of a chronic ulcer, but I doubt very much if the light by itself would be sufficient to bring about a cure in even such a condition. It might be of some value in stimulating granulation tissue.

Q. What would you say as to its value in cases of ringworm? [108]

A. I think its value in ringworm would be very little, personally. Ringworm is a fungus infection and forms spores, and those spores are very resistant to therapeutic measures. They may remain alive even exposed to just sunlight for long periods of time, and, for instance, an infection, a ringworm infection, between the toes like athlete's foot, well, it would not be possible for the light to strike the areas adequately, on account of their position, to exert much of a therapeutic effect.

Q. What would be your opinion as to the usefulness of such a device in the treatment of athlete's foot?

(Testimony of Dr. Samuel Ayres, Jr.)

A. I don't think it would be. It is not a proper means of treating athlete's foot.

Q. Do you think it would be of any value at all?

A. I doubt it. [109]

Q. Would such a device be of any value in the treatment of acne?

A. I think it would be of very little value in the treatment of acne. Acne is a condition that comes on during adolescence, due to an over activity of the oil glands and the formation of blackheads, and that is the basis for the blebs, the pustules, and pimples, which are due to bacteria that will grow in such a skin that would not grow in a clear skin, and, therefore, the use of a light on this sort of skin could not do any more than produce a peeling and a temporary stimulating effect, but it would not in any way change the underlying condition of the skin, that is, the formation of the blackheads and the oiliness.

I would say its effect in acne would be very small. It is sometimes used as a supplement to other forms of treatment, where a person, for instance, has had the proper amount of x-ray and if there happens to be some acne still left, an ultra-violet light is sometimes added, but it is not the method of choice. And of the types of ultra-violet light, [110] I personally have seen better results from the other types of quartz lamp, which give the longer wave lengths.

Q. You mean by that the so-called hot quartz?

A. Yes, with the tanning. I think you get a little better effect on acne when you use that type.

(Testimony of Dr. Samuel Ayres, Jr.)

Q. How about eczema? Would it be of any value in the treatment of that?

A. It may be of some temporary value in eczema, although I don't think it is of sufficient value to effect a cure from it. Eczema is simply a symptom of a disease of the skin, just like a headache is the symptom of other ailments of the body, and eczema can be due to so many different causes that without finding out the underlying cause, it is perfectly futile to try to treat it.

In other words, you can have eczema due to external causes, from soap that people use in washing dishes, and things of that sort, from which they get a chemical condition, and eczema may be due to food sensitization. There are many, many things that can cause the symptom we call eczema, and without finding out what is underlying the condition, it would be perfectly futile to try to treat it with any measures such as this. The most it can do would be to give a certain degree of temporary relief, although personally I haven't found that its value is enough to employ the lamp in that condition myself. [111]

Q. In your opinion, it would be necessary or advisable for a person having eczema to obtain a diagnosis and treatment by a qualified physician?

A. I think it certainly would, in order to expect any definite results.

Q. I believe you mentioned psoriasis a while ago.

A. Yes.

Q. What exactly is the value, if any, of such a device in the treatment of psoriasis?

(Testimony of Dr. Samuel Ayres, Jr.)

A. Well, psoriasis is another skin condition, the cause of which is entirely unknown. It is characterized by reddish thickened patches that occur on various parts of the body, covered with a heavy scale. Sometimes psoriasis will come out rather acutely, come out rapidly over various parts of the body, and an acute case of psoriasis would be definitely aggravated by using ultra-violet light sufficient to produce an erythema.

On the other hand, chronic psoriasis, where there are long standing thickened patches could be definitely benefited by ultra-violet light of either type, although again I feel the hot quartz is preferable.

Q. In your opinion, would the average lay individual be able to diagnose his own particular condition of psoriasis, so as to enable him to use such a device with effectiveness?

A. I don't think he would be able to diagnose it himself, [112] unless he had been told by some physician that he had psoriasis.

Q. And it would be necessary to use a lamp under the supervision of a physician in such a case?

A. I would believe it should be. [113]

Q. Would such a device as the respondent's product be of any value in the treatment of sores and ulcers?

A. Yes, it might be of some value in the treatment of certain chronic ulcers, by way of stimulating cicatrization, but again one would have to know what the ulcer was caused by. You could have an ulcer due to syphilis and no amount of light would

(Testimony of Dr. Samuel Ayres, Jr.)

do it any good. Or you may have an ulcer due to cancer and the use of the light might even aggravate it.

Q. It would be necessary to have the diagnosis of a physician in all of these cases?

A. Very definitely.

Q. What would you say as to the value of such a device in the treatment of bacterial skin diseases?

A. Probably of slight benefit. I think that question has been answered already. Probably of slight benefit, as in [114] impetigo, and in other ways.

Q. In bacterial infections?

A. Provided it is supplemented by such action as opening the pustules and removing crusts, and that sort of thing, and with the use of proper local medication in between the light treatments. In other words, I would not for a minute depend on the use of a lamp for the sole treatment of the thing.

Q. What are the generally recognized causes of skin diseases, Doctor?

A. They are just as varied as the causes of disease in general. Skin diseases can be caused by external infection of bacteria, external infection of fungus or ringworm, external infection of animal parasites, like scabies; internal fection with bacteria, such as shingles or tuberculosis; external sensitivity to contact with dyes in clothing, and through contact with things that a person handles in the course of his work; internal factors, such as sensitivity to certain foods or pollens; disturbances of metabo-

(Testimony of Dr. Samuel Ayres, Jr.)

lism, and a whole host of skin diseases, the causes of which are entirely unknown.

Q. Are many of those germs or organisms or bacteria found on the surface of the skin or beneath the outer surface of the skin?

A. Well, I don't know that I could say "most." In the [115] diseases of the skin that are due to bacteria, about the only one in which it is found right on the surface is impetigo. In most of the others the infection lies deeper; as in barber's itch, it is in the hair follicle and it burrows its way deep into the hair follicle.

Q. In the case of those infections which are deeper and below the surface of the skin, what is your opinion as to the value of such a device?

A. I don't think it would have any particular value, because most of the rays of the light are filtered out by the upper skin layers.

Q. Would you say that such a device would stimulate the tissues of the skin?

A. Under certain conditions it might stimulate the tissues. It depends on what you mean by "stimulate."

For instance, it might have this effect on some ulcerations. It might stimulate the formation of new granulation tissues.

In the case of acne, especially at the conclusion of a series of x-ray treatments, if there might be a few remnants left over, enough of this light to cause vigorous peeling might produce a slight benefit, but I don't think that it would do more than that.

(Testimony of Dr. Samuel Ayres, Jr.)

As to stimulating, I don't think you get any great deal of stimulation—I will put it this way: The effect [116] of producing the redness means that the blood vessels are dilated, and there might perhaps be some degree of stimulation in that regard, but I don't think that it would have any lasting effect or be of any particular value in the conditions that have been mentioned, other than in stimulating new granulation in ulcers, perhaps.

Q. Would you say the use of such a device would build up resistance in the body against disease?

A. I think that is a very difficult question to prove one way or the other. I think it would be very difficult to prove that, and from the best opinions that I have been able to find, those resistances are more apt to be built up under conditions of radiation simulating the natural sunlight, where there are more of the longer wave lengths producing tanning.

Q. In your opinion, would it produce any chemical reaction in the body, so far as the blood is concerned?

A. Well, it might perhaps improve the calcium metabolism to some degree. I wouldn't want to say how much.

Q. Would you say that it would make an improvement in the metabolism?

A. I wouldn't be willing to say. I don't know just how much benefit you could get from it. I think it is unquestionably proven that natural sunlight does have a generally stimulating effect on

(Testimony of Dr. Samuel Ayres, Jr.)

metabolism, improves the [117] calcium acceleration, perhaps improves the appetite and affects the general well-being of the body, but I don't believe that you could expect to get the same effect from this type of radiation.

Q. In your opinion, would it aid in overcoming a deficiency of the white or red corpuscles?

A. I couldn't answer that. I wouldn't know whether it would or not.

Q. In your opinion, would it produce a tonic effect on the blood?

A. That is too vague a question. I don't know what that would be.

Q. That is not a medically recognized term?

A. No.

Q. In your opinion, would it stimulate the endocrine glands?

A. I don't see how it could, particularly.

Q. In your opinion, would it quiet and soothe the nerves or the nerve endings in the skin?

A. Possibly to a very slight extent, but again I don't think—it is such a vague term that if you mean would it allay itching or would it allay pain, I doubt very much if you would get a very great effect from it. In fact, there are some conditions in which the itching might be made much more intense. For instance, you take a condition like hives or urticaria and expose it to ultra-violet light, and I would [118] anticipate that you would get an increase in itching rather than a lessening of the itching.

(Testimony of Dr. Samuel Ayres, Jr.)

Q. Would you say that such a device would act as an anti-acid or have an equalizing effect upon the body?

A. I have never heard of any such effect from it. [119]

Q. How about sores? I think we coupled sores and ulcers. Is that a proper coupling, or should they be distinguished?

A. I think they should be distinguished, because a sore is a very general term. A boil would be a sore, but it certainly is not an ulcer.

Q. Would such a device be of any assistance in the treatment of sores?

A. I don't think it would be of very much value in the treatment of sores, no, in using the term in its general scope.

Trial Examiner Reardon: Using it with reference to boils? [120]

The Witness: No, I don't think it would be of any particular value.

By Mr. Lyon:

Q. Would you say that such a device would heal most skin diseases?

A. No, I don't think it would heal most skin diseases. It would heal a very small number of them.

Q. And the same answer would be true also with reference to healing most skin diseases safely, quickly and easily?

A. Why, I doubt if it would heal hardly any

(Testimony of Dr. Samuel Ayres, Jr.)

skin diseases. I think it might be of benefit in a certain few, but as to actually healing, I doubt if it would heal very many.

Q. What would those certain few conditions be that it would assist in healing?

A. The few skin diseases in which, in my experience, this type of radiation would be of some value would be in alopecia areata—

Trial Examiner Reardon: What is that in plain English, Doctor?

The Witness: That is a type of baldness, in which the hair comes out in spots.

Trial Examiner Reardon: It knew what it was, but I wanted the record to show it.

The Witness: The cause isn't definitely known and sometimes the patches heal of their own accord, but there are [121] certain cases in which the condition is prolonged, and vigorous stimulation, such as you could produce by a redness and peeling from such a lamp, would be of value, but you could get the same effect by painting it with iodine or certain other things.

Another is pityriasis rosea. That is another condition characterized by red spots that occur on the skin. The cause is not known. The disease itself is limited anyway and if left to its own devices, it would heal up in about four to six weeks. With the use of this particular radiation, over the entire body, with a sufficient dosage to make the skin definitely red and peel, the disease would respond in probably two weeks. That is the one disease in

(Testimony of Dr. Samuel Ayres, Jr.)

which I feel it would be of value, and that is pityriasis rosea.

And in the case of psoriasis, it is of some value, along with other measures, provided you are not developing an acute attack, because in acute cases it would be apt to aggravate rather than benefit it.

Then, as mentioned before, in certain types of chronic ulcers, provided they are not due to syphilis, they might be benefited by properly supervised and administered stimulating doses.

And acne in a minority of cases would be somewhat benefited by a sufficient dose to cause redness and peeling, but I don't think the effect is as satisfactory as one could [122] get from the natural sunlight down at the beach in the summertime, and it would not in any way remove the underlying cause of acne, which is a disturbed function of the oil glands.

Mr. Lyon: I think that will be all. You may cross examine.

Cross Examination

By Mr. Tolin:

Q. Doctor, isn't it your opinion that all disease is properly a subject for treatment by a physician rather than home treatment?

A. I think that is correct. I would say supervision.

Q. Now, have you examined the particular light product that is in issue now before the Commission?

(Testimony of Dr. Samuel Ayres, Jr.)

A. I have not examined the apparatus, no. [123]

Q. Now, how long have you used ultra-violet light in your professional work?

A. I have used ultra-violet light as long as I have been in practice, which is about 20 years.

Q. This particular type, that is, light that comes from a device emanating 2537 angstrom units?

A. You mean this cold quartz type of light?

Q. Yes.

A. Since about the time it was first introduced, which I think was about eight or ten years ago. I don't recall exactly.

Q. When you say "cold quartz light", do you mean ultra-violet light of approximately 2537 angstrom units? A. Yes.

Q. All cold quartz light is about of that unit?

A. I think that is about correct.

Q. Your practice has been generally in the field of treatment of skin disorders, has it not?

A. Yes. [125]

Q. Don't you feel, Doctor, that a person who was not experiencing any particular skin disorder, but who would have used a light of this type habitually, say, once a week or so for a considerable period of time, would be less apt to develop a skin disorder than one who did not subject his skin to such treatment?

A. No, I don't think that is true, and I think certain type of skins using such a light over an indefinite period of time might develop certain harmful effects.

(Testimony of Dr. Samuel Ayres, Jr.)

Q. You mean principally, don't you, that if a person had a skin disease of a certain type and it was in a latent state, that it might be brought into an active state by the use of light?

A. Partly that, and also the fact that individuals who are of fair skins and are exposed to a good deal of actinic rays might get or are prone to develop rough patches or scaley patches on their skin, which we call senile keratoses and epitheliomas. That results too from undue exposure to natural sunlight in people who are unable to tan. I don't think this lamp has been on the market long enough to say that if a person used this lamp for a long period that that would result, but all theoretical signs of the characteristics of the apparatus, which seem to depend on erythema and which is best in people who normally tan or in dark skinned people, I would assume this sort of a device used over a prolonged period might [126] perhaps bring about undesirable effects over a period of years.

Q. Doctor, have you ever known it to do so?

A. No, because the lamp has not been in use long enough.

Q. It has been in use for nine or ten years?

A. It still isn't long enough, and its widespread use in the home isn't very extensive. I am just citing that as a possibility. I think we know very definitely that fair skinned people who go to the beach and who are light sensitive will develop this rough dry skin and get these characteristics which I have recited, and which might degenerate into

(Testimony of Dr. Samuel Ayres, Jr.)

cancer; that is, people who can't tan, and that is due to the ultra-violet radiation.

Obviously, this light doesn't provoke tanning, and it is desirable when you produce erythema and peeling, and it is just conceivable that such an effect might take place.

I think for that reason it is not a desirable thing to turn loose on the public.

Q. You are indulging in speculation there, Doctor, aren't you?

A. That is what it is. I am drawing deductions from known facts, however.

Q. However, in your earlier testimony you have told us that the radiation of this light is not comparable to natural sunlight, haven't you?

A. That is correct. [127]

Q. And now you are drawing a parallel between a condition which developed on persons exposing themselves to sunlight, to natural sunlight for long periods of time and being persons who do not pigment well, aren't you?

A. Well, merely the fact that natural sunlight provokes tanning, and the tanning prevents injury by the shorter wave lengths. Negroes and dark skinned do not show this injury from the short wave lengths. People with fair skins, who can't tan, show the injury, and it is probably due to the short wave lengths, and the short wave lengths predominate in this type of radiation.

Q. Well, the tanning is a definite reaction of the skin?

A. That is right.

(Testimony of Dr. Samuel Ayres, Jr.)

Q. And tanning does occur with natural sunlight? A. Yes.

Q. And natural sunlight does not contain rays of the length that emanate from this type of light, does it?

A. I think it contains wave lengths of all lengths. I think that a certain amount of this radiation that is contained in natural sunlight is present, but the amount in proportion to the total radiation is relatively small.

Q. Is it so small that it has never been measured, according to any of the tables or charts in authoritative works? A. I don't know.

Q. Can you cite us to any authority which does say that [128] radiation in the wave lengths that come from this type of light, cold quartz, do exist in natural sunlight?

A. I think that would be a question for a physicist to answer.

Q. Then that is something about which you are merely speculating, so far as your testimony here is concerned? A. That is right.

Q. You don't know, do you, whether cold quartz light will cause any activation of vitamin D in the human body?

Mr. Lyon: I object to that inasmuch as it was not covered by the direct examination, and is not proper cross examination.

Trial Examiner Reardon: I overrule the objection.

The Witness: I can't tell you how much

(Testimony of Dr. Samuel Ayres, Jr.)

activation the cold quartz will produce of vitamin D. I don't think there is any question that it produces some, but I don't know what the amount would be compared to what one would get from the natural sunlight. I don't think it would be so much.

By Mr. Tolin:

Q. Of course, in this matter we are not saying that this light is a miniature sun, in any way, but you are aware that it does produce some vitamin D activation?

A. I am not aware of it. I have understood that it does. That is my impression. [129]

Q. And you have gained that impression from the standard treatises and publications that are of good repute within the medical profession, haven't you?

A. Yes. [130]

Q. In answering a question about the harshness of short rays, as compared to long rays, you said that—I think you did, and if you didn't, correct me—that redness was caused by the short rays, but is it not true that redness is also caused by the long rays from hot quartz, and by [134] sunlight as well?

A. It certainly is. The redness may be caused by heat also, for that matter, but the type of redness that comes on within a few hours and lasts for a period of several days is usually due to the shorter waves, and in this particular type of cold quartz there is a higher proportion of those short waves which produce the redness and which do not cause the tanning. The tanning is produced by

(Testimony of Dr. Samuel Ayres, Jr.)

the longer waves, and which, naturally, the hot quartz also can do, both in the shorter and longer waves.

Q. Generally speaking, is erythema considered beneficial to the human body,—mild erythema?

A. I think it depends on the type of skin you are dealing with. I don't believe erythema from the sunlight is necessarily beneficial in a very fair skinned individual, unless—well, I just don't think to give him an erythema is necessarily a good thing.

Q. A simple erythema is not, however, ordinarily harmful, is it? A. No. That is right.

Q. It is one of the natural incidents of life?

A. That is right.

Q. To persons who go into the sun?

A. That is right.

Q. Generally speaking, under medical theory at the present [135] time, that is, the preponderance of medical theory, it is beneficial to people to go about into the sunlight, is it not?

A. Within moderation, and depending on the type of skin you have.

Q. With a little experience, a person can find out whether it is beneficial or harmful to that particular person, can he not?

A. Usually, although an individual might—with a fair skin might get a lot of ultra-violet radiation, either from a lamp or the sunlight, and eventually might get harmful effects and he might not appreciate the fact that he was getting harmful effects until a number of years later when the accumula-

(Testimony of Dr. Samuel Ayres, Jr.)

tive action shows up and he begins to get the dryness which is characteristic of what we call senile keratosis, which is due to an accumulated effect of erythema, so that I don't believe it is altogether without harmful effects.

Q. The only way a person can tell would be to go to a person specializing in dermatology, is that right? A. Well, no, I don't think so.

Q. Well, how else can we tell whether we are in for this disease which you have just mentioned, senile something or other, without consulting persons of your particular branch of specialty in the medical profession?

A. Well, I think probably a dermatologist would be the [136] best qualified to give a person advice about his skin, but I think any competent physician would appreciate the fact that people with very fine skins, who get repeated erythemas from ultra-violet light, from whatever source, over too long a period of time are liable to develop these undesirable effects. [137]

Redirect Examination [141]

By Mr. Lyon:

Q. Do you prescribe the use of these cold quartz lamps under any conditions, in your own practice?

A. Yes, in my own office.

Q. For what condition?

A. Alopecia areata and pityriasis rosea, certain types of chronic ulcers, a limited number of cases of acne and psoriasis, and I think that about covers the list.

(Testimony of Dr. Samuel Ayres, Jr.)

Q. Those are all used under your own supervision in your own office?

A. Those are all given under my own supervision, in conjunction with other things.

Q. Do you recommend a person using such a device in his home, when such a condition or disease has been diagnosed by you?

A. I haven't particularly recommended its use, because, as a rule, that particular treatment by itself is not sufficient. If the patient brings up the question of using a lamp at home to supplement the treatment, I have considered the feasibility of doing it and under proper safeguards, but, as I say, the question has only come up on several occasions, not more than one or two, where I can recall that a person has proposed to carry out such treatments at home. [145]

Recross Examination

By Mr. Tolin:

Q. Doctor, what is photosensitization? What is meant by that? [149]

A. Photosensitization means that an individual's skin, either from birth or as the result of some change, has become hypersensitive to light, in other words, reacts in an abnormal condition, different from the action of the normal skin.

Q. That is the condition that exists in this disease that you mentioned in your examination a while back, in which the disease is aggravated by light, is it not?

(Testimony of Dr. Samuel Ayres, Jr.)

A. Oh, if you are going into the question of photosensitization, it opens up quite a subject. There are a number of conditions that could come up under the term "photosensitization," in which a disease factor could actually be produced by light, as well as one which could be aggravated by light.

Q. Photosensitization then is just about the maximum term to use to cover all of those conditions in which a person might be abnormally sensitive to light, such as would emanate from cold quartz?

A. No, it does not cover them all.

Q. What word does?

A. An acute—well, photosensitization means they are merely light sensitive, they are allergic to light in the same way that a person is hypersensitive to egg, or anything else, but there are certain conditions in which there is no element of photosensitization. For instance, like in the [150] case of acute psoriasis, in which an erythema dose of light just might provoke a case of severe dermatosis, and I would say probably the condition you get in elderly people characterized by senile keratosis, and so on, is not so much a matter of photosensitization as it is due to the lack of ability to tan. It is not a matter of being light sensitive. It is just the fact the skin does not contain the pigment cells to tan.

Q. Is psoriasis a form of disease?

A. Yes. Dermatitis merely means inflammation of the skin, and psoriasis is one of the infectious diseases of the skin. [151]

(Testimony of Dr. Samuel Ayres, Jr.)

Certificate

This is to certify that the attached proceedings before the Federal Trade Commission in the matter of: Docket No.—4407 Case Title — Ultra-Violet Products, Inc., a corporation. Place — Los Angeles, California Date—May 28, 1941 were had as therein appears, and that this is the original transcript thereof for the files of the Commission.

ETHEL E. FISHER & ASSOCIATES, INC.

Official Reporters

By D. MacMILLAN

Assistant Secretary

DR. FRED B. MOOR

was thereupon called as a witness for the Commission and, having been first duly sworn, testified as follows:

Direct Examination

By Mr. Lyon:

Q. State your name and residence address.

A. Fred B. Moor, 239 South Charlotte Avenue, San Gabriel.

Q. What is your profession?

A. Physician.

Q. Where is your office?

A. 312 North Boyle Avenue, Los Angeles.

Q. Will you state your experience and education as a [165] physician?

(Testimony of Dr. Fred B. Moor.)

A. I am a graduate of the University of North Dakota and the College of Medical Evangelists.

Q. In what year?

A. In 1920. I have been professor of pharmacology and therapeutics for the past ten or twelve years in this school.

Q. What school?

A. College of Medical Evangelists.

Mr. Tolin: We are having trouble hearing him.

By Mr. Lyon:

Q. A little louder, please, doctor.

A. I am a member of the group of consultants for the Council of Physical Therapy of the American Medical Association. I have charge of the therapy department of the White Memorial Hospital, Los Angeles, and I am vice-president of the American Congress of Physical Therapists, and I am a member of the examining board of physical therapy technicians for the American Register of Physical Therapy Technicians. That is all, I think.

Q. Your specialty has been, I take it, in the fields of pharmacology and therapeutics and physical therapy? A. Yes, sir.

Q. You have specialized in those fields for a number of years?

A. Yes, sir. I have been at it for about 20 years. [166]

Q. What has been your general medical practice, in addition to those specialties?

(Testimony of Dr. Fred B. Moor.)

A. Well, it has been teaching and some internal medicine.

Q. Teaching where?

A. In the College of Medical Evangelists, pharmacology and therapeutics.

Q. In Los Angeles?

A. In Los Angeles and Loma Linda, California.

Q. How long have you been teaching those subjects? A. Since 1921.

Q. Doctor, will you tell us how ultra-violet rays are measured?

A. Well, ultra-violet rays are measured commonly by the use of a photometer, which is a photoelectric—contains a photoelectric quartz cell, which is excited by and which is measured by a galvanometer, which is the common way of measuring it.

Q. What is the unit of measuring ultra-violet rays? A. Well, you mean the wave length?

Q. Yes.

A. That is either a millimicron or an angstrom unit.

Q. That is, those are synonymous?

A. No. One millimicron is ten times the angstrom unit.

Q. And what is the angstrom unit?

A. The angstrom unit,—you mean in relation to the inch [167] or——

Q. Yes. In relation to the millimicron?

A. The angstrom unit is one-tenth of the millimicron.

(Testimony of Dr. Fred B. Moor.)

Q. And that is a common method of measurement of ultra-violet rays, is it? A. Yes, sir.

Q. Are ultra-violet rays emitted from natural sunlight? A. Yes, sir.

Q. What would be the wave lengths of such ultra-violet rays of the sun?

A. Well, the wave lengths of the sun's ultra-violet ranges from the limit of the ultra-violet and the visible spectrum, which is about 3900 angstroms, down to 2910, in the ultra-violet.

Q. What is the spectral range of natural sunlight?

A. The spectral range is from 2910 in the ultra-violet to around 50,000 angstroms in the infra-red, that is, through the visible spectrum into the infra-red.

Q. And the limit of the ultra-violet is about 3900?

A. That is the boundary between ultra-violet and the visible spectrum, yes.

Q. And most of the ultra-violet rays would be between what ranges of angstrom units, would you say? A. 2910 and 3900.

Q. What is a lamp which emits ultra-violet rays of that [168] spectral range commonly known as in the medical profession?

A. It is designated as a sun lamp.

Q. Is there any other commonly designated type of lamp, other than a sun lamp?

A. Well, there is a so-called therapeutic lamp.

Q. In regard to other wave lengths?

(Testimony of Dr. Fred B. Moor.)

A. The therapeutic lamps, yes.

Q. What are therapeutic lamps?

A. Those are artificial sources of radiation, in which you may produce shorter ultra-violet radiation than the sun lamp, although they may contain that same radiation as the sun lamp, too, in the spectrum.

Q. What would the ultra-violet rays of the therapeutic lamps consist of? What spectral range?

A. They go into the limit of quartz transmission, which is 1860 angstroms. That is the shortest radiation that quartz will transmit.

Q. It has been testified in this case, Doctor, that the product of the respondent in question in this case, known as the Life Lite lamp, is as follows:

Wave lengths of 2540 angstrom units, 89.2 per cent; wave lengths of 2960 to 3020 angstrom units, .6 per cent; wave lengths of 3132 angstrom units, 1.8 per cent; wave lengths of 3660 angstrom units, 1.5 per cent; visible light and heat, 6.9 per cent; total 100 per cent. [169]

How would you classify such a range?

A. That would be classified as a therapeutic lamp.

Q. What are the distinctions between a sun lamp and a therapeutic lamp, so far as their uses are concerned?

A. Well, the sun lamp is a lamp which is ordinarily used for biological effects, that is, a lamp which will produce or stimulate physiological

(Testimony of Dr. Fred B. Moor.)

changes, for instance, the activation of dehydro-cholesterol of the skin.

The therapeutic lamp contains shorter rays which may be used for bactericidal purposes, for skin stimulation, and things like that.

Q. Would you say that there was any distinction between the lamps, so far as their suitability for use without the supervision of a physician is concerned? A. Oh, yes.

Q. What is that difference?

A. Well, the sun lamp is a safe lamp, because it doesn't contain the markedly irritating rays of the therapeutic lamps. The sun lamp, of course, will start producing sunburn if it is used for a long enough period of time.

Q. What would you say would be the minimum perceptible erythema time for the use of a sun lamp? A. About 15 minutes.

Q. And with a therapeutic lamp, it would be how much?

A. It varies somewhat, of course, with distance, but we [170] figure a therapeutic lamp about 30 inches for one minute should produce a mild first degree erythema, depending on the lamp, of course.

Q. Now, it has been testified in this case, Doctor, and I call to your attention that the respondent's product consists generally of two types of lamps, one, a hand lamp designed for use in a constantly moving position over the body at a distance of not more than one inch, and the other consists of a certain lamp designed and maintained for use at

(Testimony of Dr. Fred B. Moor.)

a distance of not more than 20 to 24 inches away from the body, and having in mind the spectral range of the lamp that I have just described to you, what would you say would be the minimum perceptible erythema time for those two types of lamps, as so used?

A. Well, I don't know this particular lamp, as to its power, but cold quartz lamps with which I am familiar would produce an erythema in approximately a minute.

Q. At what distance do you mean?

A. About 20 inches.

Q. How about the distance of one inch?

A. Well, that would be a matter of a few seconds; probably five or ten seconds.

Q. Now, it has been testified by the president of the respondent company that such a lamp would produce a minimum perceptible erythema within ten to twelve seconds. Would [171] you say that was approximately right?

A. That would be approximately right, I should think.

Q. Now, what are the principal radiations in the electromagnetic spectrum, so far as classification into rays are concerned?

A. Well, we are speaking entirely of the spectrum of lamps. The electromagnetic spectrum would contain ultra-violet visible and infra-red radiation.

Q. What would be the spectral range of those various types of rays?

(Testimony of Dr. Fred B. Moor.)

A. Well, from a therapeutic standpoint the shortest ray we can get from the transmission of quartz is 1860 angstrom units. From there to 3900 is the whole ultra-violet spectrum that we have available. Then the visible spectrum extends from 3900 to approximately 7800 angstroms, where it contains the visible rays; the red, orange, yellow, green, blue, indigo, and violet. And then from 7800 we have on to, well, depending on the generator, probably up to 150,000 angstroms, we have the infra-red spectrum. The limit of the sun, of course, is about 50,000.

Q. What are the chief sources of ultra-violet radiation, both natural and artificial?

A. Well, the chief natural source, of course, is sunlight.

The artificial sources are the various lamps, the carbon arc, the mercury arc, various cathodic arcs. Of [172] course, this cold quartz lamp is really a mercury arc.

Q. Now, it has been testified in this case and admitted by the respondent company that the lamp in issue in this case is a cold quartz lamp, consisting of a mercury arc burned in quartz. Are you familiar with those lamps? A. Yes, sir.

Q. They are a common type of therapeutic lamps? A. Yes, sir.

Mr. Tolin: Just a moment, please, counsel. I will object to the question upon the ground that the testimony is not that it is a mercury arc. It is a mercury vapor discharge tube.

(Testimony of Dr. Fred B. Moor.)

By Mr. Lyon:

Q. I will stand corrected on that point, Doctor.

A. That is right.

Q. And your answer is? A. That is right.

Q. You may consider the question as it was amended by counsel for the respondent. Now, are you familiar with that type of lamp?

A. Yes, sir.

Q. What has been the nature and extent of your experience with such a lamp?

A. Well, we use one in our physical therapy department. We have had it in there for probably four or five years. [173]

Q. Would you say that the spectral range of such a lamp would be as I have previously mentioned to you? A. Yes, sir.

Q. Are all cold quartz lamps of that approximate spectral range? A. Yes, sir.

Q. Are any of those rays found in the sun's rays, to any extent?

A. Not in itself. Most of the radiation in this lamp is shorter than sunlight and not found in sunlight as it reaches the earth.

Q. What is the difference in the effect from the shorter waves found in the cold quartz lamps as compared to the effect of the rays of natural sunlight?

A. Well, the shorter rays are much more irritating to the skin. They are bactericidal, more bactericidal than sunlight. They do not have the same biological effects as sunlight.

(Testimony of Dr. Fred B. Moor.)

Q. Now, in what conditions would you say that such rays, such ultra-violet rays, of 2540 angstrom units, such as are found primarily in this respondent's product, would be useful in the treatment of disease or body ailments?

A. Useful chiefly for very superficial infections and if it is desirable to produce irritation of the skin, it can be used for that also.

Q. That is, you would say that it would have a bactericidal [174] and stimulating——

A. And stimulating effect on the skin, yes.

Q. That would be two different classifications of effect; is that correct? A. Yes.

Q. And you say the bactericidal effect would be superficial? A. Yes, sir.

Q. Just what do you mean by that?

A. Well, I mean that these rays have very little penetrating power into the surface. A very thin opaque medium of any kind will shut them out. In fact, the medium does not always have to be opaque. It may be opaque to the rays and yet be transparent to the visible rays.

Q. And what bacteria would be affected by such a lamp?

A. Well, practically any organism which is on the surface. There are a few bacteria which flourish in light, but most of the pathogenic organisms are killed by light if they are right on the surface, where they are not protected by any covering of pus or crusts on the surface.

(Testimony of Dr. Fred B. Moor.)

Q. What is the reason for the use of quartz in such a lamp?

A. Well, quartz must be used in order to allow the passage of radiation from the tube to the surface or to the outside. There are glasses, of course, which transmit. For instance, certain types of Korax glass will transmit radiation, but not as well as quartz. [175]

Q. Would there be any other possible damage caused by the use of such a lamp?

A. Well, certain diseases, for instance, pulmonary tuberculosis, ultra-violet radiation may produce actual damage by causing extension of the process, rises in temperature, and so forth.

Q. You mean by that, activate the disease?

A. Yes, activate the disease.

Q. Are there any other physical conditions or elements of [178] the body which would be injured or increased by the use of such a lamp?

A. Well, certain skin diseases may be made worse. For instance, certain eczemas, lupus erythematosus, and then some systemic diseases, like diabetes, are usually considered contra-indicated. Debilitation of seriously ill patients or elderly people, a severe kidney disease, advanced cardiac disease, are some of the contra-indications of its use.

Q. This would be true in regard to ultra-violet rays in general, would it? A. Yes, sir.

Q. That is, ultra-violet rays would be contra-

(Testimony of Dr. Fred B. Moor.)

indicated in all of the conditions you have mentioned? A. Yes, sir.

Q. That includes the ultra-violet rays emitted by respondent's products, which I have described to you? A. Yes, sir.

Q. Would it be possible for skin conditions where there is a quiescent local infection to be changed into an acute active change, with the use of such a lamp?

A. That is a possibility, yes, sir.

Q. Would persons with an unusual sensitivity be injured in some cases? A. Yes, sir.

Q. Are there any other forms of tuberculosis, in addition [179] to pulmonary tuberculosis, which would be aggravated by such rays?

A. Well, ultra-violet radiation in the form of sunlight is commonly used for extra pulmonary tuberculosis. I don't think that the others would be activated particularly from ultra-violet radiation.

Q. Would there be any forms of dermatitis which would be aggravated by ultra-violet?

A. Those that I named, especially eczema, psoriasis, possibly sometimes.

Q. Would you say that the use of respondent's device would be of any value in the treatment of chronic infections, Doctor? A. Not directly.

Q. Now, will you simplify that?

A. Well, if you mean building up resistance to an infection, that is not an accepted action of ultra-violet radiation. [180]

(Testimony of Dr. Fred B. Moor.)

Q. What would you say with respect to bronchitis? A. No direct effect on bronchitis.

Q. What is the cause of bronchitis?

A. Bronchitis is commonly caused by germs in the respiratory tract. It may be also caused by chemical irritation, but most commonly by infection.

Q. Why would ultra-violet rays not reach the source of that infection?

A. Because they don't penetrate, they are very superficial in action.

Q. It would have to be below the surface of the skin in [181] order to reach bronchitis?

A. Yes, sir.

Q. And you say ultra-violet rays, such as are emitted by respondent's product, do not reach below the surface of the skin? A. No, sir.

Q. Is that correct? A. Yes, sir.

Q. Would the use of respondent's device be of any benefit or value in the treatment of colds?

A. No.

Q. And why not?

A. Well, here again we do not believe that—at least, it is not accepted at the present time, that ultra-violet radiation builds up resistance to infections.

Q. What are the causes of colds? Are they known?

A. Well, the cause of colds is not known, but it is thought to be a filtrable virus which is not like the ordinary bacteria.

(Testimony of Dr. Fred B. Moor.)

Q. Is there any commonly accepted medical treatment for colds?

A. Nothing that is very effective.

Q. Does the medical profession recognize the use of such an ultra-violet lamp as respondent's product in the treatment of colds? [182]

A. No, sir. [183]

Q. I will name a number of skin diseases, Doctor, and ask you if this has any value in the treatment of such diseases. [184]

Q. Ringworm?

A. I doubt if it would be of value in ringworm, although I wouldn't want to be too sure of that.

Q. Athlete's foot? A. No value.

Q. And why not?

A. Because the organism which produces the fungus which produces athlete's foot burrows down into the skin and the tendency of the organism would be to go deep.

Q. What is the accepted medical treatment for athlete's foot?

A. Various ointments. One is the so-called Whitfield's ointment, acetoacetic acid. That is Whitfield's. Another is phenolmercuo nitrate.

Q. Doctor, it has been testified in this case by the president of the respondent that he cured himself, without any medical advice or supervision, of a case of athlete's foot by the use of ultra-violet rays of his product involved [185] in this case. Would you say that would be possible?

(Testimony of Dr. Fred B. Moor.)

Trial Examiner Reardon: Just a moment. Off the record, please.

(There was a discussion off the record.)

Trial Examiner Reardon: On the record.

By Mr. Lyon:

Q. I will modify that question, Doctor, and assuming that he has testified that he had such a condition of athlete's foot and used the ultra-violet lamp for a considerable length of time, with no other treatment, and the condition disappeared. Would you say that that would be due to the results or influence of the ultra-violet rays of such a lamp?

A. Assuming that the diagnosis was correct, I would have to admit it was caused by the lamp.

Q. Would athlete's foot disappear without any medical treatment, or treatment of any kind?

A. Not usually.

Q. Assuming that no other treatment is used, would you say that the ultra-violet rays in that case would have had some effect?

A. Likely so.

Q. In your opinion, in most cases it would have no effect; is that true?

A. I think so.

Q. Would it be possible for anybody to have a superficial [186] case of athlete's foot, where the organism had not burrowed into the skin?

A. Well, the nature of the organism is such that I think it usually burrows into the skin. I am not a dermatologist. I don't know about the microscopic pathology concerned here, but I know that this organism does burrow into the skin.

(Testimony of Dr. Fred B. Moor.)

Q. Ordinarily, the ultra-violet rays will not penetrate that far? A. That is right.

Q. What would you say in regard to acne, Doctor? A. Of little value in acne.

Q. What value would it have?

A. Well, it may produce some slight temporary improvement, but not permanent.

Q. What would the temporary improvement be?

A. The lessening of the number of pustules.

Q. What is the generally accepted medical treatment for acne?

A. Well, the best recognized treatment is x-ray therapy.

Q. How about eczema?

Mr. Tolin: Objected to as asked and answered.

By Mr. Lyon:

Q. How about eczema, as regards the treatment of such a condition by respondent's device?

Mr. Tolin: Objected to as asked and answered.

Trial Examiner Reardon: On what ground, please? [187]

Mr. Tolin: As asked and answered. He has already gone into that.

Mr. Lyon: I don't think he has. I don't believe I asked him that question.

Trial Examiner Reardon: Have you answered that before, Doctor?

The Witness: It seems to me I answered a question on eczema. I am not certain.

Trial Examiner Reardon: I will overrule the objection. It may be repetition.

(Testimony of Dr. Fred B. Moor.)

Mr. Lyon: It will not do any harm anyway.

The Witness: Not usually considered of any value in eczema.

By Mr. Lyon:

Q. Psoriasis?

A. You are speaking of this particular lamp now?

Q. Yes, that is right, I am talking of the respondent's product.

A. I would say it is of no value.

Q. Of no value? A. Of no value. [188]

Q. Would respondent's device be of any value in the treatment of sores or ulcers?

A. It might.

Q. In what way?

A. As a stimulating effect to hasten healing.

Q. Would it heal them, in your opinion?

A. Not by itself.

Q. You make a distinction between sores and ulcers, from a medical standpoint?

A. Well, the distinction I would make is that in chronic ulcers I would specify that this probably would be the only [189] indication for such a use, because you need stimulation to hasten healing.

Q. Would you say that use of such a device would stimulate the tissues in the skin?

A. These short rays are likely to be damaging to the human tissues and, therefore, this lamp would not be desirable for most open wounds; only, I would say, the very chronic ones. The longer ultra-

(Testimony of Dr. Fred B. Moor.)

violet rays, such as are contained in sunlight, would be better for this purpose.

Q. What is the stimulating effect, if any, of ultra-violet rays, such as are found in the cold quartz lamps? Just how far would that effect go?

A. Well, it would change a chronic inflammation into a more acute one, and thereby probably promote healing somewhat.

Q. Would it have any tendency to build up resistance in the body against disease? A. No.

Q. And why not?

A. Well, resistance against disease means a stimulation of antibody formation; for instance, white blood cells and various chemical antibodies, and ultra-violet radiation has not been shown to have that effect on white blood cells.

Q. Would the use of such a device produce a chemical reaction in the body, in your opinion?

A. Only in the activation of ergosterol in the skin. [190]

Q. And just what is that?

A. It really isn't ergosterol that is activated. It is a cholesterol derivative which is activated by ultra-violet rays, chiefly those, however, in the longer range for the production of vitamin D, and vitamin D influences the absorption of calcium and phosphorous from the gastro-intestinal tract and its deposition in bone, especially in children.

Q. Are you familiar with a book written by Dr. Richard Kovacs on the subject of Ultra-Violet Radiation and Therapy? A. Yes, sir.

(Testimony of Dr. Fred B. Moor.)

Q. Would you agree with his statement that the——

Mr. Tolin: I will object to that as hearsay.

Trial Examiner Reardon: You have read that, I suppose, and you may ask any question that occurs to your mind,——

Mr. Lyon: All right.

Trial Examiner Reardon: ——without stating what your question is based on.

By Mr. Lyon:

Q. In your opinion, would you agree that the only definite benefits known to come from the use of ultra-violet rays would be the maintaining of the phosphorous and calcium of the body and inhibition of rickets?

A. Really, that is the only well proven effect of ultra- [191] violet radiation of the body.

Q. In your opinion, would that be the only proven benefit from such a device,——

A. Yes.

Q. ——of the respondent, as described to you in this case? A. Yes, sir.

Q. Would you say that such a device would keep the blood stream in balance?

A. I would say no, because that is a rather vague statement, keeping the blood stream in balance.

Q. It is not a medical term? A. No, sir.

Q. Would you say that it would aid in overcoming a deficiency of the white or red corpuscles?

A. No.

(Testimony of Dr. Fred B. Moor.)

Q. Would it produce a tonic effect on the blood?
[192]

A. No.

Q. Would it have any effect at all upon the blood?
A. No.

Q. Would it stimulate the endocrine glands?

A. No, not so far as we know.

Q. What are the endocrine glands?

A. The glands of internal secretions, such as the thyroid, the pituitary, the adrenals.

Q. Would it quiet the nerves or the nerve endings in the skin?
A. No.

Q. Would it act as an antacid or have an alkalizing effect upon the body?
A. No.

Q. Would the use of such a device result in the improvement of the person's own metabolism?

Trial Examiner Reardon: What do you mean by "such a device"?

Mr. Lyon: As respondent's product. I am talking about respondent's product in all these questions.

The Witness: Well, we speak of the handling of phosphorous and calcium as metabolism. Are you speaking of metabolism of the carbohydrates? If that is the question, I would say no.

By Mr. Lyon:

Q. What is metabolism? [193]

A. Metabolism applies to the general chemical processes of the body, such as the absorption—not the absorption, but the handling, the burning of

(Testimony of Dr. Fred B. Moor.)

carbohydrates and fats, the handling of calcium and phosphorous. Most of the chemical processes of the body are sometimes spoken of as metabolism; for instance, the absorption and assimilation and elimination of nitrogenous food, spoken of as nitrogenous metabolism.

Q. Would you say that the use of respondent's device would have any regulatory influence on the metabolism in cases showing a calcium and phosphorous deficiency? A. Some, not much.

Q. Would it normalize the body chemistry?

A. No. In so far as calcium and phosphorous metabolism is concerned, that would be the only effect.

Q. What was that again, please?

A. Only in so far as calcium and phosphorous metabolism is concerned.

Q. What would be the effect in those cases? [194]

A. It would hasten the absorption and deposition of calcium and phosphorous in bone. [195]

Cross Examination

By Mr. Tolin:

Q. Doctor, isn't it the general philosophy of the medical profession that people should not undertake any health measures, other than the ordinary activities of eating and sleeping, except on the advice of a physician? [198]

A. I don't know just what you mean by "health measures."

Q. I mean by "health measures" the use of any-

(Testimony of Dr. Fred B. Moor.)

thing, either a physical force of some kind, or a chemical or foodstuff other than that which people will eat at the ordinary dinner table, or the sleep that they will have when they have ordinary repose.

Mr. Lyon: Just a minute. If the Examiner please, I object to the question as being entirely too general. I think that it should be limited to a device such as in issue in this case.

Trial Examiner Reardon: No, I will overrule the objection. You may answer.

The Witness: I think that is true. Physicians are interested in protection of the public, and most of these things, outside of eating and sleeping, are something which may have some potential danger in them.

By Mr. Tolin:

Q. I, for instance, might be suffering from diabetes and not know it, and be injuring myself by the diet which is acceptable to a normal individual, but injurious to one in that condition; isn't that true? A. I think that is true.

Q. So that even in the every day activities, you think we really need to do that with some guidance from the medical profession, don't you? [199]

A. We would be better off if we did have some guidance; most of us.

Q. Now, do you use a quartz lamp in your practice? A. Yes, sir.

Q. How long have you used it?

A. About 18 years.

(Testimony of Dr. Fred B. Moor.)

Q. The quartz lamp and the device sold by the respondent here are the same thing, aren't they?

A. Not the quartz lamp I have used.

Q. Well, wherein does the quartz lamp that you used differ? A. We use the hot quartz lamp.

Q. Oh, haven't you ever used cold quartz?

A. We have a cold quartz lamp which we use occasionally, but most of our work is done with hot quartz.

Q. In what way have you used cold quartz?

A. We have used it mostly for the treatment of certain skin conditions. That is practically all we have used it for at any time.

Q. What skin conditions have you used it for?

A. We have used it for pityriasis rosea and impetigo. I think those are the only things we have used it for.

Q. Have you obtained good results with it, in the use for those particular disorders?

A. In pityriasis, yes; in impetigo, I would say no.

Q. You know, however, that the medical profession generally [200] does consider it useful in the treatment of impetigo?

A. Not generally accepted.

Q. You have used that term, "not generally accepted," before in your testimony here. Can you tell me what you mean by that?

A. Well, I base that on the opinion of the Council of Physical Therapy of the American Medical Association. They have issued various

(Testimony of Dr. Fred B. Moor.)

statements on such equipment, and that is what I base that on. If they accept it, I assume it is generally accepted.

Q. Where may those statements be found?

A. They issue statements at various times in the Journal of the American Medical Association, and in the section by the Council of Physical Therapy.

Q. Are they issued in any other publication, that you know of?

A. They get out a pamphlet or a book, I just can't recall the name of it at the moment, but those things are published in a book and issued by the Association.

Q. Is that the Archives of Physical Therapy?

A. No, the Archives of Physical Therapy is the Journal of the American Congress of Physical Therapy.

Q. Is that an organization of which you are an officer?

A. Yes, sir.

Q. Are the statements, the articles, in the Archives of [201] Physical Therapy accepted as authoritative, with respect to this type of thing, that is, ultra-violet light of one kind and another?

Mr. Lyon: Accepted by whom? I think that should be specified.

Mr. Tolin: Accepted by the medical profession.

Trial Examiner Reardon: Off the record.

(There was a discussion off the record.)

Trial Examiner Reardon: On the record. Repeat the question, please.

(The question was read by the reporter.)

(Testimony of Dr. Fred B. Moor.)

The Witness: The originator of the statement would have to be considered in that case. Some men bear more weight than others.

By Mr. Tolin:

Q. The Archives of Physical Therapy, however, do not contain articles by men who have no standing at all in the field of physical therapy, do they?

A. That is right.

Q. So that, in order to have an article published in that publication, one would have to be recognized as a legitimate practitioner of medicine?

A. That is right.

Q. And for the most part, in order to have an article accepted in that publication, one would have to be recognized [202] as having some specialized experience or training in the field of physical therapy?

A. Yes.

Q. Now, generally speaking, the Council of Physical Therapy, in its publication, where it issues a statement upon a subject, will base that statement only upon an experience, which to the mind of the majority of the Council conclusively establishes that the particular device or product does accomplish a particular result beyond all question?

A. That is right.

Q. So that, in order to obtain a favorable statement for a particular device or treatment, in a statement of the Council of Physical Therapy, it is necessary for that product or thing that is brought to their attention to have had an established experience of success, is it not?

A. That is right.

(Testimony of Dr. Fred B. Moor.)

Q. Hence it is true, isn't it, that many devices have been used successfully for a considerable period of time prior to their being favorably reported upon in a statement of the Council of Physical Therapy?

A. Yes, that is true. Of course, in many instances they have never been submitted to the Council. For example, apparatus, if accepted by the Council, is submitted to the Council and they study it and approve it, if it seems to be of value. [203]

Q. Well, aren't your statements here in evidence, your conclusions as to the matter that you testified to, based upon the statements of the Council of Physical Therapy? A. Some of them are.

Q. What were the others based on?

A. My own personal experience and observation.

Q. Now, just what personal experience and observation have you had with a cold quartz lamp, in its use upon the human body?

A. I have had it in my department for several years and have used it occasionally.

Q. Have you used it upon any person for treatment of diseases other than the two that you mentioned in a previous answer?

A. No, I don't think I have.

Q. Now, you have mentioned quartz lamps as emitting rays of angstrom units as low as 1860. It is true, however, isn't it, that the angstrom units emitted from such lamps may go up as high as 2900? A. Yes, sir.

(Testimony of Dr. Fred B. Moor.)

Q. You did not intend to state that 1860 was an inflexible angstrom unit limit of those rays?

A. It is the inflexible limit of quartz by transmission. Quartz will not transmit any radiation shorter than 1860.

Q. But it does transmit radiation up to 2900?
[204]

A. Oh, yes.

Q. When the respondent here claims that his product transmits radiation of 2537 angstrom units, that is entirely within the probabilities, isn't it?

A. Of quartz transmission?

Q. Yes. A. Yes, sir.

Trial Examiner Reardon: Is the answer "yes"?

The Witness: Yes.

Mr. Lyon: If the Examiner please, the evidence shows 2540 instead of 2537, I believe.

Mr. Warren: There is no technical difference.

Trial Examiner Reardon: Off the record.

(There was a discussion off the record.)

By Mr. Tolin:

Q. May we consider that that question referred to 2540 instead of 2537? A. Yes, sir.

Q. Would your answer be the same?

A. Yes, sir.

Q. Does the sun lamp ordinarily have a beneficial effect upon the human body?

A. If it is used according to proper indications, yes.

Q. The only practical difference in its effect

(Testimony of Dr. Fred B. Moor.)

upon the body lies in the fact that it takes longer to obtain a result [205] from the sun lamp than it does to obtain the same result from a therapeutic lamp, isn't that true?

A. Except that the therapeutic lamps have shorter radiation, as a general thing, than the sun lamps.

Q. With that exception, the answer would be "yes", would it not?

A. May I hear that question again?

(The question referred to was read.)

A. No, I would say that isn't true, because the therapeutic lamp has shorter radiation. It is more irritating than the sun lamp and it doesn't have the pronounced biological effects that the sun lamp has.

Q. What pronounced biological effect is obtained with the sun lamp that is not obtained with a therapeutic lamp?

A. The activation of vitamin D from cholesterol in the skin.

Q. Does not the therapeutic lamp have that effect?

A. Not the cold quartz lamp. It has the effect, but not nearly as great as the longer wave lengths contained in sun lamps.

Q. There is an appreciable activation of vitamin D in the human body by the use of cold quartz, is there not?

A. That is true.

Q. And the practical effect of that is that the calcium metabolism of the body is improved?

(Testimony of Dr. Fred B. Moor.)

A. That is right. [206]

Q. Now, just what does calcium metabolism involve?

A. It involves the deposition of calcium in the bone structure, and, also, the calcium is present, of course, in all tissues of the body.

Q. What percentage of the calcium of the body is present in the bone structure?

A. Well, I can't give you the figure offhand. It is a high percentage.

Q. But there is a definite percentage present in the blood and lymph of the body as well?

A. That is right, yes, sir.

Q. What is the function of that calcium that is present in the blood and lymph?

A. The calcium in the blood is necessary for blood coagulation, necessary for contraction of muscle. It is necessary for sedation of the nervous system. That is, the nervous system causes you to be very irritable in the absence of calcium.

Q. So a calcium deficiency in the blood gives rise to various nervous and muscular diseases, does it not?

A. That is right.

Q. It gives rise also to heart disease, does it not?

A. Well, if the deficiency were severe enough, it might, but that is not a common cause of calcium deficiency—a common cause of heart disease, I should say. [207]

Q. Calcium deficiency diseases are among the serious diseases with which the human race is afflicted, however?

A. Yes, sir.

(Testimony of Dr. Fred B. Moor.)

Q. In your opinion, is calcium deficiency of the blood corrected to any extent at all by the use of cold quartz light?

A. It must be because it benefits rickets.

Q. Rickets is a calcium deficiency disease, is it not?

A. True.

Q. And from a condition of rickets many other diseases result, is that true?

A. No, not directly.

Q. But they co-exist, that is, the same condition that has brought about rickets will bring about numerous other diseases in the same person?

A. I wouldn't accede to that statement. I don't believe that is so.

Q. Well, is any statement approximately like that true? If so, will you make such a statement?

A. It is true that rickets occurs in debilitated children; that is, children are debilitated with rickets, and that might predispose them to other diseases, that is true.

Q. Rickets is caused by a deficiency of calcium or some defect in calcium metabolism, is it not?

A. Not caused by a deficiency of calcium alone. It is [208] caused by a deficiency of vitamin D.

Q. Then the use of a cold quartz light frequently would tend to activate in the body vitamin D to the end that the person so using the light would be less apt to have calcium deficiency, would it not?

A. Correct.

Q. And if we avoid calcium deficiency, we are

(Testimony of Dr. Fred B. Moor.)

exerting a general prophylaxis in our body, are we not? A. To a certain extent. [209]

Q. Now, what are the two diseases in which you have used cold quartz light in your own practice? A. Pityriasis rosea and impetigo.

Q. Those are the only ones? [211]

A. Yes, sir.

Q. Now, doctor, is it true that cold quartz light, emanating from a light such as you have examined here in the hearing room,—

Trial Examiner Reardon: You mean the respondent's?

By Mr. Tolin:

Q. —the respondent's light, does reach the blood stream?

Mr. Lyon: Just a minute. I will object to that question as referring to something not in evidence.

Trial Examiner Reardon: Overruled. He may answer.

The Witness: I can't say. It is very superficial in action, but whether its penetration would be enough into the skin to reach the blood stream, I do not know.

By Mr. Tolin:

Q. Vitamin D is manufactured in the skin, is it? A. Yes, sir.

Q. The skin consists of several layers?

A. That is right.

Q. I don't know if that is a correct medical term,

(Testimony of Dr. Fred B. Moor.)

but that is the way I understand, it does consist of several layers, does it not? A. Yes, sir.

Q. What is the first one, as we go in?

A. The epidermis.

Q. What happens in the epidermis when ultra-violet light, [212] emanating from cold quartz, strikes it?

A. Well, vitamin D is manufactured somewhere in that superficial layer of the skin. It is manufactured even, apparently, in feathers of birds, so that it does not necessarily mean that the radiation strikes the blood stream.

Q. Is the epidermis itself made up of several layers?

A. Yes, there is more than one layer of epidermis.

Q. What are they?

A. Well, there is a very superficial layer of dead cells, and then there is another—probably another layer below that. I don't remember all the layers of the skin myself. There is another layer. Then you come to the true skin or dermis below that, in which the blood supply is abundant.

Q. In which the blood supply that fills the skin and nourishes it is found; is that right?

A. Correct.

Q. And is it the blood that comes into that part of the skin that receives ultra-violet light from a cold quartz light?

A. I don't know whether your radiation penetration would be enough to reach the blood in the

(Testimony of Dr. Fred B. Moor.)

deeper layer of the skin or not. I am under the impression that it does not.

Q. Well, is it your testimony now, Doctor, that you do not know how far into the skin cold quartz emissions of 2540 or 2537 angstrom units will penetrate? [213]

A. I know it is very superficial, but I can't state in millimeters. It is probably less than one millimeter, the penetration.

Q. How thick is the skin?

A. Oh, the skin, the whole skin, probably three or four or five millimeters thick.

Q. Do you know, without just hazarding a guess, but do you know from your study or observation whether cold quartz light does in some instances penetrate the skin and reach the body tissue below the skin?

A. I have not done the experiments myself. It was done at the University of Chicago by Dr. Bachem.

Q. Dr. Albert Bachem? A. That is right.

Q. Of the University of Illinois?

A. The University of Illinois, that is right.

Q. Do you consider statements by Dr. Albert Bachem upon the subject of cold quartz light as authoritative? A. Yes, they should be.

Q. Do you know what Dr. Albert Bachem says respecting the depth at which ultra-violet light emanating from cold quartz of 2537 angstrom units has penetrated the skin of a white human being?

A. I don't remember his exact figure.

(Testimony of Dr. Fred B. Moor.)

Q. You don't know from any other source,——

[214]

A. No, sir.

Q. ——to what depths——

A. Not the exact depth.

Q. ——that a light of that kind penetrates?

A. Not the exact depth.

Q. You are not prepared to say that it does not go all the way through the skin, are you?

A. Why, certainly, I am. I judge from data contained in medical literature. I don't do everything, of course, myself, that you ask here.

Q. Please understand, Doctor, I am not asking you that your whole answer should be based on what you have done. Would you state that a statement of this kind is true:

“From the various physical and biological effects observed we can state that the wave length, 2537 angstrom units, has enough penetrating power to produce biologic effects; that it causes an erythema with little danger of over-exposure and accumulation; that it has a positive antirachitic effect; it produces Vitamin D and does not destroy it as long as excessive irradiation is avoided. Hence, there is not antagonistic effect between this and the longer actinic rays.”

Would you say that that statement is true?

A. Yes, sir. [215]

Q. “In regard to the bactericidal effect it does

(Testimony of Dr. Fred B. Moor.)

not differ from rays of longer or shorter wave length."

By "it" meaning that 2537 angstrom units of ultra-violet light transmitted through cold quartz. Would you say that statement is correct?

A. I would say that is correct.

Q. Do you recognize it as quotations from the writings of Dr. Albert Bachem in the Archives of Physical Therapy?

A. Well, I don't remember the statement. I suppose I have read it, but I don't remember it.

Q. Well, do you know that Dr. Bachem has given an opinion of that kind, or to that effect?

Mr. Lyon: I object to that. The witness has already answered the question.

Trial Examiner Reardon: I overrule the objection. You may answer.

The Witness: Well, I don't remember that statement of Dr. Bachem?

By Mr. Tolin:

Q. Do you know whether that statement is in keeping with the general course of instruction of Dr. Bachem? A. I think it is.

Q. Would you say that this statement is correct:

"The valuable action of ultraviolet irradiation in skin diseases is due to many effects. Among the [216] general effects are:

"(a) stimulation of cellular metabolism;
(b) increased resistance of the body to infec-

(Testimony of Dr. Fred B. Moor.)

tion; (c) stimulation of the vasomotor reflexes of the body; (d) improvement in the functional activity of the skin in consequence of a redistribution of blood amongst the organs of the body; (e) production in the skin of Vitamin D which hastens the healing of certain skin conditions; (f) alteration in blood chemistry—calcium, potassium, etc.—the rays acting as a mordant for calcium; and (g) a marked psychological improvement”?

A. Of course, those are the opinions of one man, but even though Dr. Bachem—if that is from Dr. Bachem,—may be an authority, there are numerous other authorities who do not agree with him on all of those statements.

Q. But do you agree with those statements?

A. Not all of them.

Q. Well, let's go through them and let us see how far you will go along with this statement. “Stimulation of cellular metabolism;” do you agree with that?

A. Well, that is quite a general statement. I wouldn't want to agree with it and not know just what type of cellular metabolism is meant.

Q. Well, to some extent would you say that cellular [217] metabolism is influenced by the use of cold quartz?

A. No, I wouldn't even state that.

Q. Is your refusal to say that based upon the fact that you feel not sufficiently acquainted with the literature of the subject to know?

(Testimony of Dr. Fred B. Moor.)

A. No, it isn't.

Q. Is it based upon your own experimental work or your class room instruction at the time that you have been a student? A. No.

Q. Is it based upon laboratory work done by others under your supervision? A. No.

Q. Upon what is it based?

A. It is based upon the statements of the Council of Physical Therapy of the American Medical Association, who have enumerated the things for which they think cold quartz light is good, and that is one of them that we have no evidence on, that it stimulates cellular metabolism.

Q. Doctor, in Scottish law they have three forms of verdict that a jury can bring in. They can say, "guilty," "not guilty," and "not proved." Now, I say that by way of a preface to this question: Is your answer then that you cannot say that cellular metabolism is influenced by the use of cold quartz light of 2537 angstrom units based upon [218] the fact that to you it is not proved?

A. Yes, sir, that is right.

Q. And you accept the fact that the Council of Physical Therapy of the American Medical Association has so far maintained the position, not proved? A. Correct.

Q. Now, let us take (b): "Increased resistance of the body to infection." Do you agree that that is true? I mean as to all of these, of course, upon the application of 2537 angstrom units from a device such as the respondent manufactures?

(Testimony of Dr. Fred B. Moor.)

A. No, I don't agree with that. Neither is that proven.

Q. Is your disagreement upon that same basis?

A. Yes, sir.

Q. And solely upon that basis?

A. Yes, sir.

Q. "(c) Stimulation of the vasomotor reflexes of the body—there is an increased tolerance to extremes of temperature." Do you agree with that statement?

A. I agree with that statement in relation to sunlight, but not on the basis of cold quartz.

Q. With relation to ordinary sunlight or the sun lamp?

A. Sunlight or the sun lamp. Sunlight more so, however.

Q. You believe that would be true of the sun lamp? A. Yes. [219]

Q. What is the position of the Council of Physical Therapy of the American Medical Association with respect to that statement, as it relates to exposure to ultra-violet from a sun lamp, if you know?

A. Well, I don't know what the attitude of the Council is on that. That is a personal opinion of mine and based on observation of patients also. For instance,——

Q. You have used the sun lamp considerably in your practice, haven't you?

A. Well, I have used something equivalent to it, yes.

(Testimony of Dr. Fred B. Moor.)

Q. And most of your experience in ultra-violet has been with the sun lamp and hot quartz, rather than with the cold quartz?

A. That is true.

Q. In fact, so far as the use of cold quartz in general therapy, you wouldn't say that you have had any experience, would you?

A. Very little.

Q. Not sufficient upon which to base an opinion as an expert witness?

A. Not from personal experience.

Q. Well, let's take (d) in this statement: "Improvement in the functional activity of the skin in consequence of a redistribution of blood amongst the organs of the body." Do you agree with that?

[220]

A. No.

Q. Is your disagreement on the basis that it has not been proved? A. That is right.

Q. And by that you mean that it has not been proved to the extent that the Council of Physical Therapy of the American Medical Association has accepted it as proved?

A. Well, I don't know that I have ever seen a statement by the Council on that particular thing.

Q. You mean it has not been proved to you?

A. It has not been proved to me, that is right.

Q. What would prove it to you, Doctor, if it were to be proved? How would it be proved to you, in your practice or study?

A. Well, it would be evidenced by changes in

(Testimony of Dr. Fred B. Moor.)

skin circulation, increased skin temperature, probably tanning.

Q. It would be proved by your taking a cold quartz light and turning it on somebody and seeing the results, wouldn't it, or rather than on somebody, on a number of persons?

A. Study, and my knowledge of other types of ultra-violet radiation.

Q. I will proceed now to (e), and ask you if this statement is true, with respect to cold quartz light of 2537 angstrom units, emitted from a device such as respondent manufactures, that it would cause "production in the skin of Vitamin D [221] which hastens the healing of certain skin conditions"? Is that true?

A. I think that is true. No. I beg your pardon. You said "of skin conditions"?

Q. Yes, "of certain skin conditions".

A. Oh, I don't think vitamin D has anything to do with it.

Q. Would you say that vitamin D has no function whatsoever in the healing of skin conditions?

A. Not so far as is known.

Q. Vitamin D, in so far as you are aware of its function in the body, has to do with calcium and phosphorous metabolism?

A. Yes, sir.

Q. Is phosphorous metabolism different from calcium metabolism?

A. Well, they are very similar. They are reciprocal. They go along together, because calcium is deposited in the skeleton as calcium phosphate?

(Testimony of Dr. Fred B. Moor.)

Q. What about this language of "a marked psychological improvement"? Do you agree with that?

A. Oh, that is a possibility with any kind of treatment.

Q. As a matter of fact, doctors often paint the skin of patients with a brilliantly colored drug, whereas so far as the therapy is concerned, they could get the same results from a colorless one, just to bring about a psychological improvement in the patient? [222]

A. I think quacks probably do it. I don't think ethical medical men do.

Q. Do you agree with this statement as a true statement, with respect to the use of cold quartz light of 2537 angstrom units, or thereabouts, emitted from a device such as respondent manufactures:

"The sedative effect of ultraviolet irradiation on the nerve endings in the skin is very valuable in allaying the intense and distressing itching associated with many skin dermatosis"?

A. No, I wouldn't agree with that.

Q. Is your failure to agree with that based upon the position of the Council of Physical Therapy of the American Medical Association that it is not proved?

A. That it is not proved.

Q. Is that your sole disagreement with that statement?

A. Yes, sir.

Q. Will you say that this statement is true: "With respect to eczema ultraviolet irradiation is of especial value in the less acute and more chronic forms"?

(Testimony of Dr. Fred B. Moor.)

A. If it is to be used in eczema, I think that is true.

Q. Do you agree with this statement as to urticaria:

“Mild application of actinic rays usually suffice to relieve the intense itching and to clear up the condition”? [223]

A. Well, it might lessen the itching, but not clear up the condition.

Mr. Lyon: May we have a definition of that particular disease?

The Witness: Urticaria is one of the allergic diseases, related to asthma and hay fever. It is due to a protein sensitization. Some people are sensitive, for instance, to strawberries, which produces urticaria.

By Mr. Tolin:

Q. Then the use of actinic rays would be simply palliative rather than curative?

A. That is right.

Q. But they would have some palliative effect?

A. Somewhat.

Q. What is the definition of “actinic rays”?

A. Well, the word “actinic” means chemical, a chemical action.

Q. Would it refer to rays of the type that emit from——

A. Yes, sir.

Q. ——the device the respondent manufactures?

A. That is right. [224]

Q. Would you say that this statement is a true

(Testimony of Dr. Fred B. Moor.)

statement, having reference to the use of cold quartz light:

“The proof that such acceleration of oxidation and reduction reactions does take place”—

well, that is not a good statement with the word “such” in that.

I will find another statement here. Would you say that this statement could not be true concerning cases treated with cold quartz light:

“Cases of tuberculosis in children and cases of early tuberculosis in war prisoners (adults) demonstrated a definite increase in activated oxygen in the blood.”

A. I wouldn't say that could not be true.

Q. If it were true, do you think it might have been caused by the radiation with cold quartz light?

Mr. Lyon: Objected to as speculative.

Trial Examiner Reardon: Overruled.

The Witness: I don't know whether it would be or not.

By Mr. Tolin:

Q. Do you know the position of the Council of Physical Therapy of the American Medical Association on that point?

A. I don't think they would accept it. I don't know absolutely, but I doubt if they accept it.

Q. You are a member of the Council, aren't you?

A. No, I am not a member of the Council. I am a member of [227] the educational committee of the Council. I am not a member of the regular Council.

(Testimony of Dr. Fred B. Moor.)

Q. How does the publication, "The Archives of Physical Therapy, Official Journal of the American Congress of Physical Therapy" compare in standing with the physicians of this country, with the British Journal of Physical Medicine? [228]

A. I think it has better standing in this country than the British Journal of Physical Medicine.

Q. Is it in this country comparable to the physicians here with the British Journal of Medicine to the physicians there?

A. I can't say as to that.

Q. It is considered a reliable publication?

A. Yes, in the field which it covers, it is.

Q. Do you know of a physician by the name of Frank H. Krusen? A. Yes, sir.

Q. What is the standing of Frank H. Krusen, as a man familiar with ultra-violet radiation?

A. He has very good standing.

Q. Would you say that this statement is a true statement:

"Ultraviolet irradiation produces photochemical effects with activation of substances in the skin and possibly in the blood. Biologic effects, such as stimulation of metabolism, cellular activity, growth and circulation are also produced. Ultraviolet radiation in wave lengths shorter than 315 millimicrons will prevent and cure rickets. These rays, in wave lengths shorter than 315 millimicrons, will impart an antirachitic potency to fats, milk, ergosterol, 7-dehydrocholesterol, oils, and vegetables. [229]

(Testimony of Dr. Fred B. Moor.)

Such radiation causes delay or latent erythema of the skin of human beings, improves the tone, color and elasticity of the skin and presumably increases the cutaneous secretory and protective powers. Also, irradiation with ultraviolet energy will increase the active oxygen content of the l-i-p-i-d-s——”

A. Lipids.

Q. ——“lipids of the skin, thus increasing their bactericidal action”?

A. I think that is all true.

Q. Is this true:

“On general exposure to ultraviolet radiation there will be produced an increase in the number of erythrocytes, leukocytes, blood platelets and hemoglobin of the circulating blood and a decrease in the hydrogen ion concentration, coagulation time and eventually in the blood volume. A transient lowering of blood pressure is produced by exposure to ultraviolet rays”?

A. There is one controversial point in there, which hasn't been proven. That is the effect on hemoglobin and red blood cells, or erythrocytes. Otherwise, I think that it is all accepted.

Q. Is this true: “From wave lengths longer than 290 milimicrons there are presumably stimulative effects [230] on the human body.” Is that true?

A. Yes, that is true, with biological rays. You don't have any of those in your lamp though; that is, not enough of them to speak of.

(Testimony of Dr. Fred B. Moor.)

Q. Well, there are some, aren't there?

A. Very few.

Q. Is this true:

“General exposures to ultra-violet rays improve muscular tone, increase the metabolism of proteins and minerals and increase the ability of the organism to utilize more effectively materials which are present but not available”?

A. There might be some controversy about the metabolism of proteins. In fact, there is.

Q. Isn't there, however, respectable and respected medical authority to the effect that ultra-violet rays emanating from a device, such as the respondent here manufactures, will produce that?

A. He doesn't specify the wave length there, does he?

Q. I have read you statements and asked you if they were true. In some of them it does specify, as the question shows, shorter than 315 millimicrons, and in another longer than 290.

A. Of course, most of the therapeutic lamps have shorter radiation than 315 millimicrons.

Mr. Lyon: What is that in angstrom units? [231]

The Witness: Just multiply it by ten: 3150.

By Mr. Tolin:

Q. I read you one question here, Doctor, which had reference to ultra-violet radiation in wave lengths shorter than 315 millimicrons?

A. That is right.

Q. Now, you remember generally that question.

(Testimony of Dr. Fred B. Moor.)

Will you say that the biological effects that I recited in that question would be—or, that your answer to the question would be the same if I added to it, assuming that the light used was light coming from such a device as respondent here manufactures?

A. Well, I would alter my statement somewhat, if I thought the only light we had came from a device of this wave length. You said a wave length shorter than 3150, which many therapeutic lamps have, and which the longer hot quartz light has, for instance.

Q. Of course, I don't want to have your "yes" answer, which you gave me, stand if we were not having a definite understanding on it.

A. Krusen is not talking about the wave lengths of this type, particularly. He is talking about wave lengths shorter than 3150.

Q. Now, let me read you part of this statement, Doctor, and as I go along in it, you bear in mind the device that is [232] in controversy here, and stop me at a point where your answer would be other than the matter I am reading to you:

"Ultraviolet radiation produces photochemical effects with activation of substances in the skin and possibly in the blood. Biologic effects, such as stimulation of metabolism, cellular activity, growth and circulation are also produced."

A. That is where I would object. That last statement there.

Q. What part of it?

(Testimony of Dr. Fred B. Moor.)

A. Well, regarding metabolism and cellular activity.

Q. You would object to this part of that statement then: "stimulation of metabolism, cellular activity, growth and circulation are also produced"?

A. That is true.

Q. You feel that is not true?

A. At least is unproven.

Q. That is, it is unproven to the Council of Physical Therapy of the American Medical Association?

A. Yes.

Q. And that is your sole basis for non-acceptance of that statement?

A. Oh, not entirely.

Q. Well, in your own experience, are those the sole bases of your rejection? [233]

A. That and perusal of medical literature which I have read on the subject.

Q. I will now read a little further here, with the same undretsanding, that you are going to stop me when I come to a place where you disagree:

"Ultraviolet radiation in wave lengths shorter than 315 millimicrons will prevent and cure rickets. These rays, in wave lengths shorter than 315 millimicrons will impart an antirachitic potency to fats, milk, ergosterol, 7-dehydrocholesterol, oils and vegetables."

Would you say that that is true of a devise that radiates wave lengths of 2537 or 2540 angstrom units? A. That is right.

Q. I will now read on: "Such radiation causes

(Testimony of Dr. Fred B. Moor.)

delayed or latent erythema of the skin of human beings, improves the tone, color and elasticity of the skin"——

A. I would object to that for this lamp.

Q. What part of that would you object to?

A. "Improves the tone and elasticity."

Q. It says "tone, color and elasticity." Does your objection go to color too?

A. Well, color is all right. I would say elasticity and tone, as unproven.

Q. By saying "unproven", you mean unproved to the Council of Physical Therapy of the American Medical Association? [234]

A. Yes.

Q. And solely on that basis?

A. Not entirely. On basis of perusal of medical literature aside from that.

Q. You mean unproved to you?

A. Unproved to me, yes, sir.

Q. You consider that the position which you take on these matters is identical to the position taken by the Council of Physical Therapy of the American Medical Association, do you not?

A. Well, largely; not entirely.

Q. You recognize that your position on matters of what is proved in the field of ultraviolet radiation is that of an ultra-conservative physician?

Mr. Lyon: Just a minute. That is objected to as argumentative.

Mr. Tolin: I am asking him on the basis that if a man gets up and says, "I am pretty radical on this subject", that means one thing, and if the man

(Testimony of Dr. Fred B. Moor.)

is ultra-conservative, it goes to the weight to be given the testimony.

Trial Examiner Reardon: I will overrule the objection.

The Witness: You mean that I am ultra-conservative?

By Mr. Tolin:

Q. Yes, Doctor? [235] A. No.

Q. On the subject of ultra-violet radiation?

A. I don't think I am ultra-conservative.

Q. What do you classify the observers of literature on ultra-violet radiation, and men who have and hold theories respecting it,—into ultra-conservatives, conservatives,—

A. And enthusiasts.

Q. —liberals, and radicals, and enthusiasts? Now, where would you place yourself?

A. Well, I would say probably a conservative. Not ultra-conservative.

Q. I will now read another statement. I am about finished.

“Also, irradiation with ultraviolet energy will increase the active oxygen content of the lipids of the skin, thus increasing their bactericidal action.”

Do you agree with that?

A. I think that is all right.

Q. As to the respondent's product?

A. Yes.

Q. “Ultraviolet irradiation will impart an anti-

(Testimony of Dr. Fred B. Moor.)

rachitic potency to the milk of cows or pregnant or nursing mothers''?

A. That is unproved for this lamp.

Q. Is it proved as to ultra-violet radiation at all? [236] A. Yes.

Q. It has not been disproved as to this lamp, has it? A. No, sir.

Q. Have any of the things you have said are unproved been disproved, to your knowledge?

A. Not so far as I know.

Q. Is it not true that in the field of ultra-violet therapy and the use of therapeutic lamps of 2540 or 2537 angstrom units, there is great division of opinion among physicians and research men of high standing?

A. I think that is true. [237]

Redirect Examination

By Mr. Lyon:

Q. I believe you stated that you are connected with the White Memorial Clinic here in Los Angeles? A. Yes, sir.

Q. And you say you have used a cold quartz lamp in connection with that clinic?

A. Yes, sir.

Q. How many years have you had that lamp there? [238]

A. We have had it four years.

Q. And what was the reason that you did not use it for any other diseases except the two that you mentioned, impetigo and pityriasis rosea?

(Testimony of Dr. Fred B. Moor.)

A. Because I have always considered the hot quartz lamp better for our purposes.

Q. And what is the difference between a hot quartz lamp and a cold quartz lamp?

A. Well, the hot quartz lamp is a mercury vapor arc in a quart tube, which has much longer ultra-violet radiation, that is, longer than this lamp here, extended way up and through the visible spectrum. As a matter of fact, there we have potent lines and a continuous wave,—potent lines in the biological region, in which there is also radiation of the sunlight.

Q. What is the majority of the spectral range of the hot quartz light?

A. They lie between 2900 and 3900 angstroms.

Q. Those are longer rays than the cold quartz?

A. Longer rays. They also have many short rays too.

Q. Those longer rays are regarded as more therapeutic than the shorter rays; is that correct?

A. Yes.

Q. Is that the general opinion of the medical profession? A. I think so. [239]

Q. By the way, what is your position with the White Memorial Clinic?

A. I am director of physical therapy.

Q. How many patients do you have occasion to observe during the course of a year?

A. We treat twenty to twenty-five thousand patients a year.

(Testimony of Dr. Fred B. Moor.)

Q. How many physicians are there under your immediate direction and supervision?

A. We have three.

Q. How many of these patients do you have occasion personally to observe during the year?

A. I write the prescriptions for all of them. I don't always see all of them, but the prescriptions come in from other physicians, and I re-write them to fit the patient.

Q. And you used the hot quartz lamp on numerous individuals in your experience?

A. Oh, yes.

Q. How many would you say, approximately?

A. Well, I have used it for years. I could not say absolutely, but I would say probably 10,000 patients.

Q. That is during the course of your entire experience——

A. My entire experience.

Q. ——with the White Memorial Clinic?

A. Yes.

Q. How long have you been there? [240]

A. I have been at the White Memorial Clinic only since 1937.

Q. How many cases have you treated with the cold quartz lamp?

A. I can't state definitely. We treat only two conditions, as I have already mentioned to you.

Q. And those are what?

A. Pityriasis rosea and impetigo.

Q. What was your experience with respect to impetigo, with the use of the cold quartz lamp?

(Testimony of Dr. Fred B. Moor.)

A. We didn't find it so very effective in impetigo.

Q. Would you say it was of any value in that condition?

A. I would say it is of little value.

Q. How about the other disease,—pityriasis rosea?

A. It is of definite value in pityriasis rosea.

Q. In your opinion, are those the only two diseases or conditions of the human body in which the cold quartz lamp would be useful in physical therapy?

A. No. I would say it is useful also for its influence on calcium metabolism.

Q. Anything else besides those?

A. That would be about the limit.

Q. By the way, Doctor, do you know anything about the standing of Dr. Samuel Ayres of Los Angeles?

A. Samuel Ayres is one of the most prominent skin men in [241] the city; well known throughout the country, as a matter of fact.

Mr. Lyon: I see. That is all.

Trial Examiner Reardon: Doctor, I was going to ask you: Is the cold quartz lamp that you have used and your staff the same as the respondent's cold quartz lamp here?

The Witness: It is the same type of radiation, but much more potent.

Trial Examiner Reardon: Thank you.

(Testimony of Dr. Fred B. Moor.)

Recross Examination

By Mr. Tolin:

Q. It has the same angstrom units, 2540, approximately, in the majority of its rays?

A. Yes, sir.

Q. And all cold quartz lamps are approximately the same, so far as the spectral range is concerned?

A. Yes, sir.

Mr. Tolin: That is all. [242]

Trial Examiner Reardon: The Commission has rested.

Mr. Tolin: I call Dr. Truesdail.

DR. ROGER W. TRUESDAIL

was thereupon called as a witness for the Respondent and, having been first duly sworn, testified as follows:

Direct Examination

The Witness: The name is Roger W. Truesdail, T-r-u-e-s-d-a-i-l.

By Mr. Tolin:

Q. Dr. Truesdail, will you state your profession?

A. Well, I am a consulting chemist and consulting nutritionist.

Q. Where did you take your training in that work?

A. Well, my graduate training was done at the University of Oregon and the University of Washington.

(Testimony of Dr. Roger W. Truesdail.)

Q. Prior to that, did you take any scientific work at all?

A. Yes. I had my Bachelor's Degree from the University of [244] Redlands in chemistry.

Q. What degree did you take at the University of Oregon? A. Master of Science.

Q. What degree did you take at the University of Washington?

A. Doctor of Philosophy and Chemistry.

Q. How long have you been engaged as a consulting chemist and consulting nutritionist?

A. Since 1931.

Q. Where have you practiced that profession?

A. Here in Los Angeles.

Q. Do you have any connection with any of the institutions of learning here?

A. Yes. Since 1935 I have been a lecturer in chemistry at the University of Southern California.

Q. Have you had any teaching connection with any of the other schools here, that is, in the Southwest?

A. Yes. I was—prior to starting my own laboratories here in Los Angeles, I was in the Department of Chemistry for four years at Pomona College, and prior to that I had been, as acting head of the department of chemistry for one year, at the University of Redlands.

Q. Have you taught in any schools outside of California?

A. Yes, the University of Nevada.

(Testimony of Dr. Roger W. Truesdail.)

Q. Have those teaching positions been in the teaching of scientific subjects? [245]

A. Yes, entirely in the field of chemistry.

Q. Are you connected with some laboratory or institution here at the present time?

A. Yes. I am president and director of the Truesdail Laboratories here in Los Angeles.

Q. What is the nature of the work that is carried on at the Truesdail Laboratories?

A. Our work is essentially in the field of chemistry and bacteriology.

Q. Are you affiliated with any scientific institutions or organizations?

A. Yes I am.

Q. Will you tell us some of them?

A. Well, I am a Fellow in the American Institute of Chemists; and also a Fellow in the American Association for the Advancement of Science; a charter member of the Institute of Food Technologists; and a member of the American Chemical Society, the American Public Health Association, and the Biochemical Society of Great Britain.

Q. How many years have you been engaged in nutritional research work?

A. Well, I have been doing work in nutrition since 1925.

Q. In the course of that work, have you had occasion to study vitamin D?

A. Yes, I have. [246]

Q. Have you ever done any work in experimentation with vitamin D, to determine its pres-

(Testimony of Dr. Roger W. Truesdail.)

ence in animals and the effect of different supposed sources of vitamin D in animals?

A. Yes. Our work has been involved in the biological testing of various food and pharmaceutical products, and also processes involving the creation of vitamin D.

Q. And have you been engaged in that study for the same period of time?

A. Well, the work that I have done in vitamin D has been done primarily during the past 12 years.

Q. Can you outline to us, in a general way, what your work has been with respect to vitamin D?

A. Well, yes. We have done work in the field of determining the vitamin D content of pharmaceuticals and food products, and have also conducted laboratory investigations to develop processes for the creation of vitamin D in various food products.

Q. Had you been engaged in that work prior to February 20, 1935? A. Yes, I had; yes, sir.

Q. Extensively or was that the beginning of your work?

A. No. As I stated previously, the beginning of my interest in this particular vitamin work dates back approximately 12 years from now.

Q. Do you know Mr. Warren, seated beside me at the counsel [247] table? A. Yes, sir.

Q. Have you examined the Life Lite cold quartz lamp that is manufactured by Ultra-Violet Products, Inc., the respondent in this case?

(Testimony of Dr. Roger W. Truesdail.)

A. Yes.

Q. Have you physically examined any of those Life Lites?

A. Yes, I have. As a matter of fact, I have owned one.

Q. Have you used it?

A. Yes, I have used it in my own home.

Q. Did you at some time during the year 1935 conduct experiments with respect to that Life Lite, meaning the cold quartz light sold under the trade name, Life Lite, which is produced by the respondent here?

A. Well, our work on that was done approximately at the beginning of 1935.

Q. At whose instance did you do that work?

A. At Mr. Warren's, as one of our clients.

Q. When you say "our clients", whom do you mean? A. My client.

Q. At what place did you conduct your experiments?

A. Well, at that time they were conducted in my laboratories in the Bendix Building here in Los Angeles.

Q. With what light did you conduct the experiments?

A. Well, those particular experiments were conducted with [248] the regular home Life Lite, the lamp that I see there on the table, as near as I can tell.

Q. Do you refer to the hand model Life Lite?

A. Yes, the hand model, with the timing device.

(Testimony of Dr. Roger W. Truesdail.)

Q. In the course of that experimentation, did you get burned yourself? A. No, I never did.

Trial Examiner Reardon: Is that the lamp, to further identify it, that has the instructions in Commission's Exhibit 1 and 2?

Mr. Tolin: Yes.

Trial Examiner Reardon: I see.

Mr. Tolin: I don't think that the witness saw those instructions.

Trial Examiner Reardon: All right. I just wanted to know.

Mr. Lyon: Why not ask the witness if he saw the instructions for the use of that lamp?

Mr. Tolin: All right.

Trial Examiner Reardon: I just wanted to connect it up with something we had in the record here.

By Mr. Tolin:

Q. I show you Commission's Exhibit 1, and ask you if you have ever seen that before?

(Handing document to witness.) [249]

A. Well, I have seen instructions similar to this. I don't know whether it was this particular one, but it was similar to this.

Q. You are not familiar with this particular exhibit?

A. I don't recall this particular exhibit here.

Q. I show you now Commission's Exhibit 9 and ask you if on that Exhibit 9 you recognize a picture of the type of Life Lite with which you conducted the experiments?

(Testimony of Dr. Roger W. Truesdail.)

A. Yes. The one on the back here, this hand lamp here (indicating).

Mr. Tolin: May I mark a figure there? What would you suggest?

Mr. Lyon: Why not have the witness describe it as described in that particular circular, the model number, and so on?

Mr. Tolin: All right.

Trial Examiner Reardon: Let him mark an "X". Let the witness put an "X" immediately near that one that he indicates to be the one that he means on the exhibit.

The Witness: Well, this particular type here (indicating), the one with the timing device, is the one that I used.

Mr. Tolin: The witness indicates Model A.

The Witness: I don't know what the difference is between that and this one (indicating), but this looks like [250] the one.

Mr. Tolin: He also indicates Model DL, saying he doesn't know what the difference between Model DL and Model A is, and indicates Model A as the one he used in conducting the experiments.

By Mr. Tolin:

Q. Is that right? A. That is correct.

Q. That being Model A, as it appears on Commission's Exhibit 9.

Now, what was the objective in the experiments?

A. The objective was to determine whether the light from this particular lamp that was submitted

(Testimony of Dr. Roger W. Truesdail.)

for investigation would cure, cause again a recalcification, in rats that had been made rachitic.

Q. Do you know whether rats are used commonly as a basis of investigation in subjects of that kind?

A. The rat is the only accepted animal at the present time, commonly used in laboratories for vitamin D tests or assays.

Q. How many individual rats have you experimented upon?

A. Well, I would think that I had probably had under my supervision or under my direct control possibly 10,000 animals or more.

Q. That is, animals that were being used for experimental [251] work?

A. For vitamin D work solely.

Q. Now, what did you do by way of experimental work with rats in this work that you did by way of testing the ultra-violet cold quartz light manufactured by the respondent?

A. Well, the technique that was used is that commonly employed for vitamin D assay work.

It essentially is this: To take young rats at weaning period, which is 28 days of age, and place them on a diet which is devoid of vitamin D, and by feeding them on this diet solely, within 18 to 21 days to produce a severe case of rickets in the animals on this particular diet.

At that time these rats were placed in individual cages, and different animals were carried through the ten day test period, but really were divided

(Testimony of Dr. Roger W. Truesdail.)

into four different groups: one, was the negative control group, which received no treatment whatsoever. They continued, in other words, on the vitamin D deficient diet. Members of other groups were placed under the light. The first group was placed under the light for two seconds each day during the ten day experimental period, with the light at a distance of approximately one inch from each of the animals of that group. In the second group the animals were placed also one inch away from the light and exposed for five seconds daily, and the third group were placed one inch away from the light, and [252] were irradiated with the light for ten seconds each day.

At the end of the ten days all of the animals were sacrificed, and the tibiae were removed from the animals and given what is known as the Johns Hopkins Line Test Technique, and the degree of recalcification that had been established in these previously rachitic bones was determined. That, essentially, is the technique, the result of which—

Q. We wanted the technique first. We are taking this up step by step. A. Yes.

Q. Now, Doctor, you said you used the commonly employed method. What do you mean by that? I don't mean for you to tell it over again, but by what do you establish that that is the commonly represented method?

A. Well, that is the method that now has become the U.S.P. method for determining the vitamin D content in foods. The only alteration be-

(Testimony of Dr. Roger W. Truesdail.)

Trial Examiner Reardon: So I will overrule the objection.

Mr. Tolin: Will you read the question again to the witness, please?

(The question referred to was read.)

The Witness: We found that there was a definite healing of rickets in all animals which were exposed for [255] the stated periods of time. The value, however, was interpolated into a conclusion that animals on the average which were exposed for five seconds per day at one inch distance during that ten day period gave a unit degree of healing, and that this corresponded at that time to 1 ADMA unit of vitamin D. The term U.S.P. unit at that time in vitamin D had not been formulated, but the conversion factor which is now accepted for ADMA units and U.S.P. units makes the healing correspond to about a third of the U.S.P. unit. That is, the light effect itself was equivalent to the administration of one-third of a U.S.P. unit per rat per day.

By Mr. Tolin:

Q. That was the result as to the rats that had the minimum amount of light?

A. I don't recall whether the report was 2 or 5. I had recalled that it perhaps was three seconds, but I don't recall whether the report shows 2 or 5.

Q. Well, Doctor, did you make a written report to the Ultra-Violet Products, Inc.?

A. Yes, we submitted a report, with the result of our findings.

(Testimony of Dr. Roger W. Truesdail.)

Q. At that time, however, it was, I think the Ultra-Violet Home Products, was it not?

A. I believe that was the name at that time, yes.
[256]

Q. But the work was done primarily at the instance of Mr. Warren, who is present here today?

A. That is correct.

Q. And the report was rendered to him?

A. Yes.

Q. Did you prepare that report yourself?

A. Yes, I did.

Q. Would you recognize it, if you were to see it again? A. Yes, I know I would.

Q. I show you what appears to be a report by Rogert W. Truesdail, Ph.D., bound in a black volume, the title page of which says, "The cure of rickets in rats exposed to the radiations of the 'Life Lite' lamp,—April 24, 1935, laboratory No. 736", and ask you if you recognize that as the report which you prepared?

(Handing document to witness.)

A. Yes, I do.

Q. Did that report truly and fully reflect the results of your research on the subject that you have testified to? A. It did.

Q. Refreshing your recollection from this report, Doctor, can you tell us in any greater detail just to what extent the experimental animals responded to the effects of the light?

A. Well, even the animals exposed here for two

(Testimony of Dr. Roger W. Trucsdail.)

seconds daily showed a very definite healing of rickets, as evidenced [257] by this data here.

Q. Indicating Table 1? A. Yes, Table 1.

Q. Can you explain for the record the legends that are used on these tables, or can you point out in the report a place where that can be determined?

A. Yes, I can do it, or there is a legend here following table IV that gives the interpretation of the results.

Q. Then I think that table will be sufficient, without asking you to go into it more orally.

Now, there appears to be a photographic chart I, beneath which are the words, "Tibiae Sections of Rats Receiving Steenbock-black ricket-producing diet No. 2965, and a 2-second daily irradiation with a 'Life Lite' ultraviolet lamp." Can you state in a little more detail what these four photographs are photographs of, and can you interpret what you see there?

A. Well, yes. These are the longitudinal sections of the tibiae. That is the long leg bone, taken from the experimental rats in this particular group, and these photographs show the result of staining the bones, and, essentially, show the line or the degree of recalcification that has occurred during the ten day experimental period.

We interpret those in pluses, all the way from one to plus six, in which plus one indicates that there is just a [258] slight degree of recalcification or healing, and two-plus indicates slightly more,

(Testimony of Dr. Roger W. Truesdail.)

but the unit degree of healing is three-plus, in which there is a continuous line of recalcification across the head of the bone. For instance, this bone here (indicating)——

Q. Indicating the bone in the upper right hand corner of the photograph, Chart I?

A. Yes, No. 3547, shows a higher degree of healing than 3544, and, likewise, 3550 shows a better degree of healing here than does 3549.

Q. Were those bones, 3544, 3547, 3549 and 3550 all from rats that received the same treatment?

A. Yes, that is true, the two seconds daily irradiation.

Q. Now, turning to photographic chart II, in which there appear to be six photographs, and the typed matter underneath them, "Tibia sections of rats receiving Steenbock-black ricket-producing diet, No. 2965, and a 5-second daily irradiation with a 'Life Lite' ultraviolet lamp". Can you elaborate further upon what is reflected by these pictures?

A. Yes. As compared to the tibiae photographs in the previous photograph, Chart I, all of these bones show a greater degree of healing than the previous bones. That is, in general, here the healing was considerably more than those with the two-second irradiations, as evidenced by the bone photographs themselves. [259]

Q. Do these bones show a condition of the rats having been entirely cured of rickets?

A. Well, no. These are not completely healed, because if they were completely healed, this osteoid

(Testimony of Dr. Roger W. Truesdail.)

tissue here would have been filled in with calcium phosphate.

Q. I notice in these photographs, Doctor, both those on photographic chart I and those on photographic chart II, and also on photographic chart II continued, and photographic chart IV, that a portion of the bony substance that is photographed is dark, and then there is a considerably lighter, almost white area. What is the difference between those two?

A. You have reference to this particular light area above the degree of healing?

Q. Yes. A. Such as this (indicating)?

Q. Yes.

A. That is the normal cartilage, what we call the normal cartilage disc of the bone. That never does heal. That is there in a normal bone.

Q. Yes. Then that is cartilage, and the darker portion is the bone?

Q. Yes, sir. That is, the bone structure itself is the dark. In this technique the bone is immersed in silver nitrate and it reacts with the calcium phosphate of the bone [260] to form silver phosphate, but silver phosphate is of a yellow color and doesn't photograph well, so what we do is expose the bones to daylight or to an ultra-violet light, and the actinic rays present cause a reduction of the silver phosphate to metallic silver, which is black, and thus what we see here is actually, while it is actually silver, reduced silver, it is itself what

(Testimony of Dr. Roger W. Truesdail.)

was formerly calcium phosphate or true bone structure.

Q. Now, if you were to indicate, using photographic chart I, what portion of that photograph shows the healing of rickets? What would you point out, and in pointing it out bear in mind that we are trying to do so for the record, so that a reviewing board looking at this exhibit and reading the record will get it, so do it with that in mind rather than showing me here.

A. Well, I lost the first part of your question. Would you mind giving it to me again?

(First portion of question read.)

A. I would point out the part of the bone below the cartilage disc, which shows black on the photograph.

Q. The cartilage disc is the considerably lighter portion between the dark part at the very top of the bone; is that right?

A. That is true. Yes, it is a disc that goes across the head of the bone. [261]

Q. You say that there is evidence of healing on all of these?

A. Yes, sir. All of those show healing, yes.

Q. Now, referring to photographic chart II continued, will you interpret that for us?

A. Well, this chart shows essentially, that is, the degree of the healing here is essentially that of the previous photographs, with the exception of possibly one bone here, 3559, which shows a less degree of healing than any of the other bone sections

(Testimony of Dr. Roger W. Truesdail.)

RESPONDENT'S EXHIBIT No. 1A

Report by Roger W. Truesdail, Ph.D. consulting
research biochemist and nutritionist, Los An-
geles, California.

The Cure of Rickets
In Rats
Exposed to the Radiations
of

The "Life Lite" Lamp

April 24, 1935

Laboratory No. 736

Ultra-Violet Home Products, Inc.

6158 Santa Monica Blvd.,

Los Angeles, California

Introduction

The research of several scientists has indicated that the radiations from the cold quartz lamp are strongly antirachitic, i.e. they have the ability to prevent and cure rickets. A Life Lite Cold Quartz Lamp was submitted to these laboratories for experimentations on February 20, 1935.

Objective

To determine the antirachitic properties of the radiations from the Life Lite Lamp by exposure of ricketic rats to them.

Experiments

Essentially the general Vitamin D "Line Test" method as recommended by the Vitamin Assay Committee of the American Drug Manufacturer's

(Testimony of Dr. Roger W. Truesdail.)

Association, (Journal of the American Pharmaceutical Association, vol. 20, pg. 588, 1931) has been employed.

Albino rats of the Wistar strain were weaned from mothers receiving the standard Breeder's Diet, when they were 28 to 32 days old and weighing 50 to 60 grams each. They were fed the Steenbock-Black Ricket-Producing Diet, No. 2965, ad libitum and distilled water. After 18 to 21 days on the rachitic diet, they were examined to determine the stage of rickets attained. The extent of rickets was determined by examination of a tibia section, properly prepared. When this examination was satisfactory the remaining rats of the litter were placed in individual cages and continued on the ricket-producing diet. These rats, suffering severe rickets, were individually irradiated with the Life Lite lamp for exposures of 2, 5 or 10 seconds, daily for 8 days. The animal was placed in a small box and the lamp burner held approximately one inch from the animal. A stop watch was used to accurately time the exposures. One rat of each litter, known as the negative control, received no irradiation.

At the conclusion of the 10th day of the experimental period, all animals were killed and the tibias removed. One tibia from each rat was given the staining technique, was then microscopically examined and later photographed. The interpretation of the degree of healing must be made by carefully examining both the tibia of the animal killed at

(Testimony of Dr. Roger W. Truesdail.)

the 18 to 21 day period termination, and the tibia of the control of the same litter.

In measuring the vitamin D content of foods, or pharmaceuticals, a unit of vitamin D is the minimum average daily amount of the sample (this being the total amount of the sample given divided by the length of the test period, 10 days) required to produce a continuous narrow line across the metaphysis of the leg bones in 4 out of 6 rats under the conditions as specified above. This continuous narrow line would correspond to a degree of + + +.

Data—Conclusions

Tables I-IV and Photographic Charts I-IV (eliminating a Chart III) contain the data and tibia photographs of this investigation. Photograph V shows the method of irradiation employed. The 2-second daily irradiation of four rats produced a + + degree of healing in two of them and a + + + unit degree of healing in the other two. Twelve animals receiving a 5-second daily irradiation showed an average degree of recalcification slightly in excess of unit healing while the average for the three receiving a 10-second daily irradiation was slightly higher. The three negative controls remained severely rachitic.

The data of this investigation indicates that a 5-second irradiation with the Life Lite lamp, under the stated conditions, is equivalent in its antirachitic

(Testimony of Dr. Roger W. Truesdail.)

effect to at least one A.D.M.A. unit of the "Sunshine" Vitamin D.

Respectfully submitted,

[Seal]

TRUESDAIL LABORATORIES,
INC.

ROGER W. TRUESDAIL

ROGER W. TRUESDAIL, Ph.D.

Director

TABLE I

"Line Test" Report Upon Rats Receiving Steenbock-Black Ricket-Producing Diet, No. 2965, and a 2-Second Daily Irradiation With a "Life-Lite" Ultra-Violet Lamp.

Rat & Litter Number	Degree of Healing or Recalcification*	Weight Gain Gm.—10 Days	Food Intake Gm.—10 Days
M 3544-3543	+ +	6	94
F 3547-3543	+ + +	11	105
F 3549-3543	+ +	9	82
F 3550-3543	+ + +	14	106
Average		8	97

* See Legend Following Table IV.

TABLE II

"Line Test" Report Upon Rats Receiving Steenbock-Black Ricket-Producing Diet, No. 2965, and a 5-Second Daily Irradiation With a "Life-Lite" Ultra-Violet Lamp.

Rat & Litter Number	Degree of Healing or Recalcification*	Weight Gain Gm.—10 Days	Food Intake Gm.—10 Days
M 3551-3551	+ + +	9	100
M 3552-3551	+ + + + +	9	96
F 3553-3551	+ + + + +	5	98
F 3555-3551	+ + + + +	13	115
F 3556-3551	+ + + + +	7	93
F 3557-3551	+ + + + +	7	85

* See Legend Following Table IV.

(Testimony of Dr. Roger W. Truesdail.)

M 3558-3558	+ + +	10	88
M 3559-3558	+	8	84
M 3561-3558	+ +	14	91
M 3562-3558	+ + + +	7	86
M 3563-3558	+ +	5	78
F 3564-3558	+ +	4	82
Average		8	91

TABLE III

“Line Test” Report Upon Rats Receiving Steenbock-Black Ricket-Producing Diet, No. 2965, and a 10-Second Daily Irradiation With a “Life-Lite” Ultra-Violet Lamp.

Rat & Litter Number	Degree of Healing or Recalcification*	Weight Gain Gm.—10 Days	Food Intake Gm.—10 Days
M 3543-3543	+ + +	17	105
F 3545-3543	+ + + +	14	108
F 3548-3543	+ + + +	11	103
Average		14	105

TABLE IV

“Line Test” Report Upon Rats Receiving Steenbock-Black Ricket-Producing Diet, No. 2965, and no Daily Irradiation (Controls).

Rat & Litter Number	Degree of Healing or Recalcification*	Weight Gain Gm.—10 Days	Food Intake Gm.—10 Days
F 3546-3543	0	12	110
F 3554-3551	0	9	100
M 3560-3558	0	6	82
Average		9	97

* See Legend on Following Page.

(Testimony of Dr. Roger W. Truesdail.)

Legend:

O=Severe rickets.

+ =Slight indications of recalcification one-third across.

+ + =Narrow line—approximately two-thirds across.

+ + + =Narrow continuous line or recalcification (Unit healing).

+ + + + =Broad continuous line of recalcification.

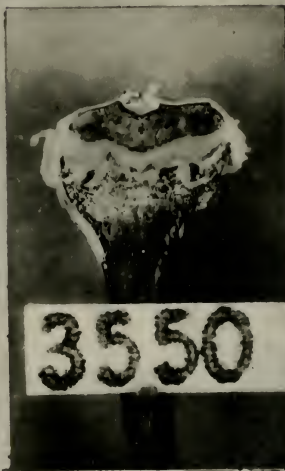
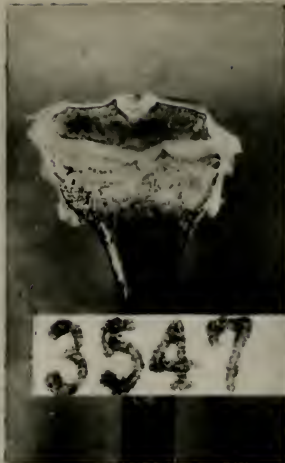
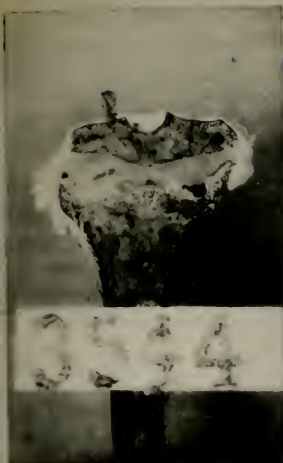
+ + + + + =Broad continuous line of recalcification extending into shaft.

C=Complete healing.

M=Male

F=Female

[Endorsed]: Filed June 1, 1943.



231

FEDERAL TRADE COMMISSION
 Docket No. 4407
 IN THE MATTER OF Ultra-Violet Rickets
 DATE 5/29/41 WITNESS Tracy
 REFLECTOR Yellow
 ETHEL E. FISHER ASSOCIATES, INC.

PHOTOGRAPHIC CHART I

TIBIA SECTIONS OF RATS RECEIVING STEENBOCK-BLACK RICKET-
 PRODUCING DIET, NO. 2965, AND A 2-SECOND DAILY IRRADIATION
 WITH A "LIFE-LITE" ULTRA VIOLET LAMP



PHOTOGRAPHIC CHART II

TIBIA SECTIONS OF RATS RECEIVING STEENBOCK-BLACK RICKET-
 PRODUCING DIET, NO. 2965, AND A 5-SECOND DAILY IRRADIATION
 WITH A "LIFE-LITE" ULTRA VIOLET LAMP

Rockefeller Commission
 4457
 IN THE MATTER OF *Ultra Violet Products*
 DATE *7/19/44* W. N. S. *Truesdale*
Jellner
 EDWARD L. FISHER & ASSOCIATES, INC.



PHOTOGRAPHIC CHART II

(CONTINUED)

FEDERAL TRADE COMMISSION
 Docket No. 4407 ~~Exhibit No. 1-K~~
 IN THE MATTER OF Ultra-Violet Products
 DATE 7/27/41 BY W. H. H. [Signature]
 [Signature]
 FEDERAL TRADE COMMISSION, WASHINGTON, D. C.



FEDERAL TRADE COMMISSION
 RECEIVED 4/4/41
 IN THE MATTER OF
 DATE 4/4/41
 Treated
 J. H. H.

PHOTOGRAPHIC CHART IV

TIBIA SECTIONS OF RATS RECEIVING STEENBOCK-BLACK RICKET-
 PRODUCING DIET, NO. 2965, AND NO DAILY IRRADIATION
 (CONTROLS)

(Testimony of Dr. Roger W. Truesdail.)

Mr. Tolin: The complaint says that the use of the device will not produce a chemical reaction in the body, and it further says——

Trial Examiner Reardon: This is a talk between you and Mr. Lyon?

Mr. Lyon: Off the record.

Trial Examiner Reardon: Off the record.

(There was a discussion off the record.)

The Witness: I was just checking here. The only photographs I do not find there are the ones for this third table, and they should be Chart III, which is not in the report. [264]

By Mr. Tolin:

Q. Do you find this report at this time incomplete?

A. I find an omission of one set of tables, which is Chart III, should be Photographic Chart III. As a matter of fact, the degree of healing on this other chart on the average is even better than the previous one, as far as the healing goes, but they are not recorded in here.

Q. Well, while Mr. Warren looks to see if he can find those, can we pass over to Chart IV, Photographic Chart IV, which has been marked 1-L, "Tibia sections of rats receiving Steenbock-black ricket-producing diet No. 2965, and no daily irradiation (control)"?

A. Yes.

Q. What does that show?

A. Well, those photographs show that the animals that received no irradiation likewise show

(Testimony of Dr. Roger W. Truesdail.)

no degree of healing of rickets. There is no black bone—there is no formation here, as evidenced by the failure to photograph black.

Q. Would you show to the Examiner this Photographic Chart II, being Exhibit 1-K, and point out to him where the healing of rickets is reflected?

Trial Examiner Reardon: Do you want to see, Mr. Lyon, what he wants?

The Witness: Now, prior to the actual irradiation, if there had been no irradiation, there had been no creation [265] of vitamin D at all in that animal, there would have been no healing, as evidenced here, you see (indicating).

Trial Examiner Reardon: “As evidenced here”, you are pointing to photograph 3558, aren’t you?

The Witness: Yes, sir.

Trial Examiner Reardon: And pointing to a black line underneath the top circumference?

The Witness: That is correct.

Trial Examiner Reardon: All right. Go ahead.

The Witness: Whereas over here (indicating)——

Trial Examiner Reardon: “Over here”, where are you now?

The Witness: On Chart IV, whereas on Chart IV——

Trial Examiner Reardon: On Respondent’s Exhibit 1-L.

The Witness: ——there is no evidence, for instance, in 3554 of any recalcification across the head of the bone whatsoever.

(Testimony of Dr. Roger W. Truesdail.)

Trial Examiner Reardon: Because there is no black line photographed; is that it?

The Witness: That is right. The same is true of 3546 and 3560. This material here (indicating) is just photographic shadows and shows no calcification.

By Mr. Tolin:

Q. Now, did any of the rats that were used as controls and [266] which received no irradiation from the respondent's Life Lite show any recovery at all from rickets?

A. All those rats which did not receive irradiation showed no healing of rickets.

Q. Were there any rats that received irradiation from respondent's Life Lite that failed to show at least partial recovery from rickets?

A. No, all of them showed some degree of rachitic healing.

Q. Did you administer to any of those rats any other source of vitamin D during the time that you were conducting the experiments?

A. No, sir.

Q. I want to ask Mr. Warren a question before I put another to the witness.

Doctor, how did you apply the ultra-violet light to these rats?

A. We placed these rats in a small cardboard box or carton, so that we could keep them immobilized to a great extent, and then we placed the light directly down on the box, resting on it,

(Testimony of Dr. Roger W. Truesdail.)

and the distance between, the average distance, at least, between the hair of the rat and the lamp itself was about an inch. And that is the way they were irradiated, and they were definitely timed each day for each animal.

Q. Were they each irradiated while they were at liberty in a cage, where any of their food was lying about? [267]

A. Oh, no. The method is to keep these animals in a dark room, where they get no light from any source except an incandescent light which does not have any curative effect on rickets, and they were kept in our regular dark room where all vitamin D animals under test are kept.

Q. So they received no sunlight during this period?

A. Oh, no. There was no light in the room, no daylight in the room.

Q. I asked you about the possible presence of the food-stuff, because I find in the writings of someone who had conducted experiments upon rats, that there is a question as to the validity of some experiments upon the basis that the rats were irradiated in cages about which there were portions of their food, and that it was possible that the food had the vitamin D activity, and the rat then obtained the vitamin from eating the food.

A. That might be possible if that was done that way, but we did not irradiate them in the cages.

Q. So that can you tell us positively that, so far as these tests were concerned, there was no

(Testimony of Dr. Roger W. Truesdail.)

possibility of anything that the rats afterwards consumed orally being irradiated by this ultra-violet light?

A. No. The rats received nothing except the regular Steenbock No. 2965 rickets-producing diet, which had not been exposed to any ultra-violet light.

[268]

Q. Would you say that the production of vitamin D by the methods that you have described amounted to a chemical change in the body of the rat subjects?

A. Well, the vitamin D which was created in the skin by the irradiation process is actually the material which governs calcium and phosphorous metabolism in the body of the rats.

Q. And calcium and phosphorous metabolism in the rats was affected by the presence of vitamin D?

A. Yes, sir.

Q. What was the effect upon it?

A. The effect that the calcium and phosphorous which had been present in not only the alimentary tract of the animal, but also in the blood stream of the animal, was made available and utilized in forming new bone tissue by forming tri-calcium phosphate.

Q. Is that, in your opinion, a chemical change in the body?

A. Well, yes, certainly. It would be a formation of tri-calcium phosphate, which would be a chemical change.

Q. Is it so considered by all chemists?

(Testimony of Dr. Roger W. Truesdail.)

A. My opinion would be that they would consider it that.

Q. It is recognized as a chemical change, is it not, by all of the standard instructors and writers upon the subject, of which you have any knowledge?

A. I believe it is. [269]

Q. What work did you do with respect to a patent involving vitamin D?

A. We did work showing that when various food and feed stuffs were irradiated with ultra-violet light that vitamin D was created in them by that irradiation.

Q. What type of ultra-violet light did you use for that purpose?

A. Well, we used different sources. The two sources we experimented with was the cold quartz and the carbon arc lamp.

Q. Do you know what the angstrom units of the carbon arc were, which you used?

A. I don't recall now, because I used special carbons which gave a biological band some place below or around 3100.

Q. A light which emits in that radiation, around 3100, is generally considered in a different classification than one which emits lower than that, is it? Or is there a dividing line somewhere in there?

A. Well, there are different bands of specific and definite wave lengths that are known as biologically active bands, and there are several of those bands. One of them is around that 3100 angstrom unit wave length, and there is also appar-

(Testimony of Dr. Roger W. Truesdail.)

ently one down around 2537 to 2540, for the reason that we were actually able to create vitamin D in food and feed stuffs by exposing them to the light from cold quartz. [270]

Q. Do you know what angstrom unit is emitted from cold quartz?

A. Well, my understanding is that between approximately 90 to 92 per cent of the light is around 2540 angstrom units.

Q. Would you say that that was the type of light that was used by you in these experiments that you made for Mr. Warren?

A. Yes, that is true.

Q. Approximately 2540 or 2537 angstrom units?

A. Yes, that is right.

Q. Would there be any practical distinction between a cold quartz light which emitted 2540 angstrom units, and one which emitted 2537 angstrom units? A. No.

Mr. Tolin: You may cross examine.

Cross Examination

By Mr. Lyon:

Q. What is rickets, Doctor?

A. Rickets is a disease as a result of improper calcium and phosphorous metabolism.

Q. And that is a disease condition of the human body, as well as in animals, is it?

A. Yes, sir.

Q. In what individuals would it commonly occur?

(Testimony of Dr. Roger W. Truesdail.)

A. Well, rickets is primarily a disease of infants and [271] growing young.

Q. Up to what age?

A. Well, generally, it shows up to the age of approximately ten years of age.

Q. It is not ordinarily found in individuals over ten years of age?

A. Not normally, as defined as rickets, although there may be improper tooth eruption, which is believed to be due in many cases to a deficiency either of vitamin D, or of calcium and/or phosphorus.

Q. It is really a disease of children then?

A. Primarily, a disease of children.

Q. What is the ordinary and common cause of rickets in children?

A. Well, the ordinary cause is a deficiency of vitamin D.

Q. And that is caused by a deficiency in the diet, ordinarily, is it?

A. Primarily in the diet.

Q. What specific deficiencies in the diet would ordinarily cause rickets in children?

A. Well, it happens to be that vitamin D is the scarcest of any of the vitamins naturally occurring in foods, so that unless the child has either irradiation from sunlight or artificial irradiation from some lamp source, they develop rickets, unless that vitamin D is substituted in their diet [272] from either a pharmaceutical or a food enhanced source.

Q. How about milk as a source of vitamin D?

(Testimony of Dr. Roger W. Truesdail.)

A. Unless milk is irradiated or the cow is fed vitamin D, so that she can metabolize vitamin D in the milk, milk is considered a very poor source of vitamin D.

Q. Well, in your opinion, would the average diet of the normal infant be sufficient to prevent the development of rickets?

Mr. Tolin: Objected to as irrelevant, incompetent and immaterial.

Mr. Lyon: I am trying to find out if it is necessary in most cases or in many cases to have any ultra-violet irradiation of any kind, in addition to normal diet, to prevent rickets. I think it is a perfectly natural and proper question.

Mr. Tolin: No particular diet or milk is being complained about here.

Trial Examiner Reardon: No. This is a question of this product.

Mr. Lyon: Also, there is no allegation as to rickets. That is why I originally objected to the entire line of questioning.

Trial Examiner Reardon: I overrule the objection.

Mr. Lyon: Will you answer that last question, please? [273]

The Witness: May I have that question again, please?

Trial Examiner Reardon: Read the question.

(The question referred to was read.)

The Witness: Not unless the child or infant

(Testimony of Dr. Roger W. Truesdail.)

receives an additional source of vitamin D, either through some pharmaceutical source, such as cod liver oil, or by irradiation through some artificial source, such as an ultra-violet lamp.

By Mr. Lyon:

Q. Well, is rickets a common disease among children?

A. Very common, unless these things are administered.

Q. What proportion of children would you say would have rickets?

A. Well, as measured, if you take as a standard dental caries, which is believed to be a symptom of rickets, they run anywhere from 75 to 85 per cent of the children which have some dental caries of the tooth structure definitely.

Trial Examiner Reardon: That ran before the discovery of vitamin D, and its effectiveness?

The Witness: Oh, yes. It used to be very much worse than it is now. I am quoting from scientific literature on the occurrence of dental caries among pre-school children that have been examined.

By Mr. Lyon:

Q. What has been the basis of your nutritional work? Have [274] you had any experience with children in that respect?

A. No. My work has been primarily—in this particular field has been primarily with animal experimentation.

Q. In your experimentation you have tried to

(Testimony of Dr. Roger W. Truesdail.)

develop by these artificial means the rachitic conditions which may occur in children?

A. Yes. That is the condition that we produce in these rats by putting them on a vitamin D deficient diet. We produce in them what we call severe rickets.

In children you find that same thing where the bone structure is so soft that they either have knock knees or bow legs due to improper calcification.

Q. Those are natural conditions, and the conditions you have produced are artificial conditions to simulate them? A. That is true.

Q. I believe you stated on direct examination that, in your opinion, the use of respondent's device would produce a chemical reaction in the human body. Is that correct? A. That is true.

Q. What would be that specific chemical reaction?

A. That specific chemical reaction would be a catalytic effect, which would permit the union of calcium and phosphorous ions to produce the chemical compound tri-calcium phosphate in the bones.

Q. In your opinion, is that the cause of the improvement [275] that you found in your experiments with the use of the ultra-violet ray?

A. Absolutely.

Q. It was due to that chemical reaction?

A. Yes, due to that formation.

Q. Now, would you say that that chemical reaction would have any effect upon the blood stream?

A. Well, only as it changed the concentration

(Testimony of Dr. Roger W. Truesdail.)
of the calcium and phosphorous ions in the blood stream itself.

Q. Would it keep the blood stream in balance, so to speak? Do you recognize any such term as that?

A. I don't recognize it by that particular expression.

Q. Is there such a thing as a normal alkaline acid of the blood?

A. Oh, yes, that is always true.

Q. What do we mean by that?

A. Well, that normal alkaline acid balance merely means the P.H. of the blood is absolutely neutral, and that occurs where you have not only adequate numbers of calcium and phosphorous ions, but other acid and base forming ions as well.

Q. What do you mean by "P.H."?

A. Well, the P.H. is the reciprocal of the log of the hydrogen ion concentrates, and it is actually an empirical measure of either acidity or alkalinity.

[276]

Q. We are getting into a little deep water here. Can you put that in a little plainer language for the layman, Doctor?

A. Well, the P.H., when you have a neutral solution that is neither acid, nor base, the P.H. of that general solution is 7. If you increase the acidity, the P.H. value becomes less than 7. If you increase the alkalinity, the P.H. becomes greater than 7. In other words, a solution with a P.H. 6 is definitely acid, and a solution with a P.H. of 8 is definitely alkaline.

(Testimony of Dr. Roger W. Truesdail.)

Q. From your experiments, would you have an opinion as to whether or not respondent's device would have an antacid effect?

A. Would have a what?

Q. An antacid effect. A. Anti?

Q. Yes, antiaacid.

A. Well, when you start to utilize the calcium and phosphorous, I don't see myself how you would have actually either an antiaacid or an antialkaline effect. What you are starting to do is using ions. Calcium is alkaline forming, and that is a cellular reaction, and phosphorous is acid forming and gives an acid reaction. So that it seems that the utilization of both calcium and phosphorous would not primarily change either the acidity or the alkalinity of the body tissue itself. [277]

Q. The one would offset the other; is that true?

A. Yes, that is what I have in mind.

Q. In other words, you say the use of respondent's device here, the Life Lite lamp, would not have any alkalizing effect upon the body?

A. It would have neither alkalizing, nor acidifying effect.

Q. Therefore, it would have no effect to change the balance of the blood stream, so far as the acid and alkaline factors are concerned; is that correct?

A. Only as it would affect the calcium and phosphorous themselves.

Q. Now, would that have anything to do with

(Testimony of Dr. Roger W. Truesdail.)

overcoming the deficiency of the white or red corpuscles? A. Not in my opinion.

Q. It would have no effect upon the blood itself?

A. Other than the effect upon utilization of the calcium and phosphorous.

Q. What does that affect?

A. Well, that affects the bone formation in the body.

Q. That is, it is a chemical reaction of the phosphorous and calcium that produces the vitamin D; is that correct?

A. No. You could have—may I state an example?

Q. Yes.

A. You may have an individual who has in his diet all [278] of the calcium and phosphorous required for normal bone structure formation and tooth formation, but unless you have either vitamin D there in the body, either by irradiation or by oral intake, the calcium and phosphorous is not utilized in the body and is simply excreted in the urine and feces, without being fed. That is why we call vitamin D a catalyst. It causes the utilization of the calcium and phosphorous that is going through the alimentary tract of the body.

Q. Would you say that the use of the respondent's product would have any tonic effect on the blood?

A. I don't know what you mean by "tonic".

Q. Well, is there such an expression recognized by nutritionists?

(Testimony of Dr. Roger W. Truesdail.)

A. Not "tonic effect." It might have a stimulative effect, that is, a temporary stimulative effect, but I wouldn't think of it as a general toning up of the entire body.

Q. Is rickets one disease or is it a combination of diseases, or a symptom of a disease, or just what is it?

A. Rickets is considered to be a definite disease itself.

Q. Would it have anything to do with any other diseases, either as a symptom or a cause, or is it just one specific disease?

A. Well, rickets itself is a specific disease, but there are other related diseases that are similar to rickets, that are also caused by improper calcium and phosphorous [279] metabolism; such diseases as osteomalacia and osteophthisis, which are actually a disease where the bone structure is not normal, and they are in a sense somewhat similar to rickets, because they are all concerned with the proper calcium and phosphorous metabolism.

Q. Do you recognize the use of a term, "normalizing the body chemistry"?

A. Well, I have heard it before.

Q. What does it mean?

A. Well, I think it is—to me, it is an all-inclusive term, and it does not mean anything specifically.

Q. It is too vague to be of any material——

A. I think it is a little broad.

Q. In your opinion, would the use of respond-

(Testimony of Dr. Roger W. Truesdail.)

ent's device have any effect to normalize the body chemistry?

A. I would say only as it applies to the calcium and phosphorous metabolism.

Q. That would be the only chemical effect it would have, in your opinion?

A. The chemical effect, yes, sir.

Q. In your opinion, would the use of respondent's device have the same effect in preventing rickets and related diseases as natural sunlight would have, or would there be any difference?

A. Well, I would say that for the actual calcium and [280] phosphorous metabolism, the light, the artificial light, is more effective than the natural sunlight, because it possesses a biological band in larger relative quantities even than sunlight.

Q. You mean the shorter rays would be more effective?

A. Yes, that is true. You can put food out in the sunlight and put milk out there, and you don't get a creation of very much vitamin D, but you can take an artificial source and produce vitamin D in it.

Q. How long did you continue these treatments on the rats that you used in your experiments?

A. Well, the test period was only for—was a standard period, which was ten days. That is the standard test for foods and pharmeceuticals as well.

Q. Is it an established principle in the use of ultra-violet light to have rest periods following the period of irradiation?

(Testimony of Dr. Roger W. Truesdail.)

A. No. You mean so far as animal experimentation is concerned?

Q. Yes.

A. Well, up until this time we were not aware of anything that had been done with actual irradiation of animals of a similar nature. They had, of course, been exposed to other sources of ultra-violet light, but the experiments were a daily irradiation that had not been performed before. [281]

Q. Is the use of an ultra-violet light, such as the respondent's product involved in this case, the commonly accepted method to prevent rickets in children, or is that used as an aid to such a treatment?

A. Well, the use of ultra-violet light irradiation, as such, is a common practice.

Q. Is it not true that the control of diet is also a very important element in the treatment and prevention of rickets?

A. Yes, proper diet, with the proper calcium and phosphorous ratio in the diet, is essential.

Q. It would be necessary to have both proper diet, as well as the use of the ultra-violet lamp, in your opinion; is that correct?

A. My opinion would be that you have to have proper diet as well as—if you are going to do this you must provide the proper amount of calcium and phosphorous in the diet.

Q. And the proper amount of diet would be sufficient, would it?

(Testimony of Dr. Roger W. Truesdail.)

A. If you incorporated the vitamin D in some supplemental source, along with that food supply.

Q. That is, by proper use of irradiated milk and butter and eggs, and other vegetables?

A. And nutritional adjuncts, such as cod liver oil or halibut liver oil, or any of the other sources of vitamin D. [283]

Mr. Lyon: That is all.

Redirect Examination

By Mr. Tolin:

Q. Is the presence of dental caries in an adult a symptom of a deficient calcium phosphorous metabolism?

A. Well, you become involved, because there are other factors there that are also necessary to maintain normal tooth structure. It is believed, however, that severe dental caries is probably due to the fact that either in the pre-natal period or the early infancy period or childhood period that there has been improper calcium and phosphorous metabolism in the body.

Q. It wouldn't mean, however, that if an adult were to develop dental caries at, say, 35 or 36 years of age, he was at that time suffering a defective metabolism as to calcium and phosphorous?

A. No. There are other factors involved besides calcium and phosphorous, I would say, at that particular age.

Q. Is there such a thing as an unbalanced metabolism as to calcium and phosphorous in an adult person?

(Testimony of Dr. Roger W. Truesdail.)

A. In my opinion, you may have an unbalanced calcium-phosphorous metabolism in an adult person due to a prolonged restricted diet.

Q. Would the use of a cold quartz light of the kind you testified to using on these rats be useful in a correction [284] of a faulty phosphorous-calcium metabolism in such an adult?

A. Yes, providing the diet itself was altered to provide the optimum of calcium and phosphorous.

Q. In substance, you mean that there might be an intake of calcium and phosphorous, and that when that calcium and phosphorous is there in the body that the use of the ultra-violet light enables the body to make use of it? A. That is true.

Q. Where did that calcium and phosphorous come from in the case of the rats that were fed the restricted diet?

A. Well, the calcium and phosphorous in those particular diets we produced—we actually produced rats in a diet in which the calcium and phosphorous intake is completely out of balance. That is one of the principles of the Steenbock No. 2965 diet, is to feed an unusually large amount of calcium and a relatively small amount of phosphorous, and because the ratio of the calcium to phosphorous is completely out of balance, and the fact there is no vitamin D in the diet and the further fact that the animals receive no light source of vitamin D, they develop rickets very quickly. As I said before, in about 18 to 21 days they have severe rickets. That is due to a combination of all of those factors.

(Testimony of Dr. Roger W. Truesdail.)

Q. Is vitamin D a necessary factor in the health of an adult,—an adult human being?

A. My general opinion, and that, I believe, of most [285] authorities, is that some vitamin D is desirable, but the actual requirements of the adult for vitamin D is unknown at the present time.

Q. Does a cold quartz light of the type manufactured by the respondent produce vitamin D in an adult human being?

A. In my opinion, it would develop vitamin D.

Mr. Tolin: Thank you, Doctor. That is all.

Mr. Lyon: Just a minute.

Recross Examination

By Mr. Lyon:

Q. Isn't it true that continued daily exposures with ultra-violet light would tend to inhibit the liberation of vitamin D in a human body rather than to liberate it?

A. Only if there was a pigmentation produced in the outer layer of the skin, such as severe tanning. In that case your penetration and absorption of your vitamin D would become increasingly limited. This is evidenced by the fact that people of dark pigmentation, such as the negroes, are the most susceptible individuals to rickets, and the reason for that is that the ultra-violet light is not absorbed, and so it is, therefore, thought by authorities, that when you produce a heavy tanning of the skin that you get less activation per unit of ultra-violet energy than you would if the skin was perfectly clear.

(Testimony of Dr. Roger W. Truesdail.)

Q. This unbalanced phosphorous and calcium condition of [286] the body that we have been talking about, is that an ordinary or usual condition, or is it unusual?

A. You are speaking now of the children or adults?

Q. Yes, I am speaking of either children or adults. In a human being.

A. Well, I can't answer that "yes" or "no." That depends, of course, upon their actual supply of vitamin D. If they are getting adequate quantities of vitamin D, then that condition would not tend to exist, provided you were getting an optimum quantity of the calcium and phosphorous.

Q. If they were getting the regular normal diet, in your opinion, would they be getting enough to get the balance of phosphorous and calcium they should have?

A. You mean by "normal diet" the average run of individuals?

Q. Yes, the average diet, if there is such a thing.

A. Well, in my opinion, the average diet is—from my own studies on human diets,—is deficient in calcium, phosphorous and vitamin D.

Q. If a person does eat a proper food in the proper amounts, in your opinion, would he have any such unbalanced condition as you describe?

A. If he gets what I call the proper diet, which is an optimum, he would not.

Q. And in such a case there would not be any need for ultra-violet irradiation? [287]

(Testimony of Dr. Roger W. Truesdail.)

A. No, if he ate what we call an optimum diet in nutrition.

Q. And the same thing would be true so far as infants are concerned, as to rickets, if the proper diet were given?

A. If an optimum diet were given, yes, sir.

Q. You say rickets do not occur in individuals over ten years of age, ordinarily?

A. Not normally.

Q. Just in infancy, however?

A. It is primarily a disease of infancy and early childhood.

Mr. Lyon: That is all.

Redirect Examination

By Mr. Tolin:

Q. Does a cold quartz light, emitting 2537 or 2540 angstrom units, cause pigmentation or tanning?

A. Practically no tanning that I have ever observed from it.

Q. Tanning is pigmentation, is it not?

A. Yes, a development of pigmentation in the skin.

Q. Then would you say that frequent use of a cold quartz light of the type that is before the Commission would not produce such tanning as would diminish the ability of the body to absorb further ultra-violet rays?

A. Well, in my opinion, it would not produce tanning of a degree that would prevent the con-

(Testimony of Dr. Roger W. Truesdail.)

tinued utilization of ultra-violet light in forming vitamin D.

Mr. Tolin: That is all. Thank you. [288]

MRS. LOIS FORD

was thereupon called as a witness for the Respondent and, having been first duly sworn, testified as follows:

Direct Examination

By Mr. Tolin:

Q. Will you state your full name, please?

A. Mrs. Lois Ford.

Q. What is your occupation?

A. I am a housewife.

Q. Where do you reside? [301]

A. 1556 North Mariposa in Hollywood.

Q. I show you Commission's Exhibit 9, and ask you if you recognize among the pictures on that exhibit any ultra-violet device with which you are acquainted. A. This one here (indicating).

Mr. Tolin: The witness indicates Model DL, as it appears upon Commission's Exhibit 9.

By Mr. Tolin:

Q. Now, where did you see a device like that pictured on Exhibit 9, which you have just referred to? A. We have one in our home.

Q. When did you acquire it?

A. Well, it was one of the first ones. I think

(Testimony of Mrs. Lois Ford.)

it must have been around 1932 or '33, along in the beginning.

Q. Where did you get it?

A. My husband brought it home. He got it from Mr. Warren.

Q. Does it have any trade name, that you know of?

A. I think there is. It seemed to me like it was "Ultra-Violet Light". I can't remember about that.

Q. Well, do you recognize it as the device that is sold under the trade name of Life Lite?

A. I think so.

Q. Now, have you used that light in your home during the time you have had it?

A. Yes, we have. [302]

Q. Who has used it besides yourself?

A. My husband uses it, and my son has used it, and we have had friends use it, borrow it and use it.

Q. In using it have you used goggles?

A. Yes, we have occasionally; not often. We often were careful about it. We would close our eyes or use it on other parts of the body. It wouldn't necessarily be the face.

Q. Have you used goggles on every occasion that you have used it about the face?

A. No, I think not.

Q. Well, have you ever experienced any burning of the eyes? A. No.

Q. Have you ever been burned about the body?

A. No.

(Testimony of Mrs. Lois Ford.)

Q. For what purpose have you used the light?

A. For colds, when we have colds, and often when—if anyone has a cold in the room, we pass it over the bedding and the pillows, and then we have used it for poison-oak, curing poison oak.

[303]

Cross Examination

By Mr. Lyon:

Q. How often did you use this lamp, Mrs. Ford?

A. Oh, often, during the years. We used it in the winter more than in the summer, of course, because there isn't as much sunshine.

Q. How often during the winter?

A. Oh, occasionally. I don't know. We used it as a health light. I don't think every day, but maybe once a week, maybe not as often as that.

Q. Not any oftener than once a week during the winter? A. I wouldn't think so.

Q. How often in the summer?

A. We don't use it in the summer, except when my son or when we get poison-oak. My boy has a tendency to get poison-oak and we used it to cure poison-oak.

Mr. Lyon: I object to the last portion of the answer.

Trial Examiner Reardon: The statement "to cure poison-ivy or a statement to that effect may be stricken. In other words, you used it, and after you used it you may have observed that the condition disappeared that you used [304] it for.

The Witness: That is right.

(Testimony of Mrs. Lois Ford.)

By Mr. Lyon:

Q. You said you have used it for colds, Mrs. Ford. Did you use it to prevent colds or after you had acquired a cold?

A. No, we used it over our bodies in the winter as a sort of vitamin source.

Q. You mean to prevent colds? A. Yes.

Q. And have you had any colds during the winter? A. Oh, yes, we have colds.

Q. You would get those colds even though you used the lamp once a week during the winter?

A. Yes, we have colds.

Q. Did you use the lamp after you had acquired the cold? A. Yes, we have.

Q. Did you keep on using it? A. Yes.

Q. Did you have any medical treatment during those periods? A. Oh, yes.

Q. You went to a doctor for the cold, did you?

A. That is right.

Q. And he gave you remedies and treatments for the cold? A. Yes.

Q. They usually disappeared after a short time, did they? [305]

A. Yes. We often use it though when we don't take medical treatment.

Q. You say it didn't prevent your getting colds?

A. No.

Q. You still get them. Would that be true, so far as the rest of your family is concerned, as well as yourself? A. Oh, I think so.

(Testimony of Mrs. Lois Ford.)

Q. The whole family would get colds from time to time? A. Yes.

Q. Would they all be using the lamp at various times? A. Yes.

Q. Not more than once a week at any time?

A. Well, it depends. It might have been two or three times a week and then we would go for a long time and not use it; for a month, maybe not use it.

[306]

CERTIFICATE

This is to certify that the attached proceedings before the Federal Trade Commission in the matter of: Docket No.—4407. Case Title—Ultra-Violet Products, Inc., a corporation. Place—Los Angeles, California. Date—May 29, 1941, were had as therein appears, and that this is the original transcript thereof for the files of the Commission.

ETHEL E. FISHER & ASSOCI-
ATES, INC.,

Official Reporters.

By D. MacMILLAN,

Assistant Secretary.

DR. PHILIP A. LEIGHTON

was thereupon called as a witness for the Respondent and, having been first duly sworn, testified as follows:

Direct Examination

By Mr. Tolin:

Q. Please state your full name.

A. Philip A. Leighton.

Q. Where do you reside?

A. In Palo Alto, California.

Q. What is your vocation?

A. I am a chemist.

Q. Are you connected at the present time with any institution? [349]

A. Stanford University.

Q. What is your position there?

A. I am Professor of Chemistry and executive head of the Department of Chemistry.

Q. Where did you take your academic work in chemistry?

A. At Pomona College in California and at Harvard University.

Q. Did you take a degree at Pomona College?

A. I took a Bachelor's Degree and a Master's Degree at Pomona College.

Q. What degree did you take at Harvard?

A. I took two degrees; a Master's degree and a Doctor's degree at Harvard.

Q. What was the Doctor's degree?

A. Doctor of Philosophy.

Q. Did you also study in some other institutions of learning?

(Testimony of Dr. Philip A. Leighton.)

A. Yes. I have studied at the University of Munich, at Johns Hopkins University, at Cambridge University in England, and at the Imperial College of Science in London.

Q. Where have you taught?

A. I have taught at Harvard University and at Stanford.

Q. Have you done any writing in the field of ultra-violet radiation? A. Yes.

Q. Can you refer us to some of your work in that field?

A. Well, I published a paper on the Characteristics of [350] the Mercury Vapor Arc back in 1926, in the Journal of the Optical Society of America; two papers on Heterochromatic Photometry in the Ultra-Violet, in the Journal of the Optical Society of America in 1930 and 1931; one paper on Spectral Fluorescence Sufficiencies in the Ultra-Violet in the Physical Review in 1932; one paper on the Use of Thermopiles for the Measure of Radiant Energy in the Journal of Physical Chemistry in 1933; three papers on the Photochemistry of Aldehydes in the Journal of the American Chemical Society in 1932 to 1935; one paper on A Recording Microphotometry in the Review of Scientific Instruments in 1935.

Q. Can you tell us in which of the institutions of learning to which you have made reference, you have made any study of ultra-violet light?

A. At Harvard University and at Stanford.

(Testimony of Dr. Philip A. Leighton.)

Q. Have your studies in the other universities to which you have referred been in the field of chemistry or physics? A. Physical chemistry.

Q. What did you teach at Harvard?

A. I taught quantitative analysis at Harvard.

Q. What has been your special field of research and study?

A. Well, I am primarily a physical chemist and my special field of interest has been photochemistry.

Q. What is the definition of "photochemistry"?
[351]

A. Photochemistry is the study of the chemical effects of light.

Q. Does that include the invisible rays, such as ultra-violet, infra-red, and so on? A. Yes.

Q. How long have you been engaged in the special field of photochemistry?

A. Eighteen years.

Q. In the course of that study, have you had occasion to investigate the various effects of ultra-violet light of 2537 angstrom units? A. Yes.

Q. Have you also studied the effects of ultra-violet light of other angstrom units? A. Yes.

Q. Is there any appreciable difference between ultra-violet light of 2537 angstrom units and ultra-violet light of 2540 angstrom units? A. No.

Q. In the course of your study of ultra-violet light, have you studied it with respect to its effect upon the human being, that is, as to its penetration of the skin, and so on?

(Testimony of Dr. Philip A. Leighton.)

A. Have I studied it personally?

Q. Yes. [352]

A. No, I have not studied it personally.

Q. You have handed me here this morning, Doctor, a chart which I will ask be marked, for identification, as Respondent's Exhibit 2, and ask you what that chart represents?

(The document referred to was marked Respondent's Exhibit 2" for identification.)

A. That represents the so-called absorption curves of various layers of the skin, and also the absorption curve of the substance, ergosterol, as a function of wave length in the ultra-violet.

Q. Whose chart is that? That is, whose work is represented in it?

A. The measurements of the absorption of the skin layers were performed by Bachem, and the absorption curve for ergosterol was obtained by Angus.

Q. Do you know whether this chart is a representation of the recognized research in the subjects there reflected?

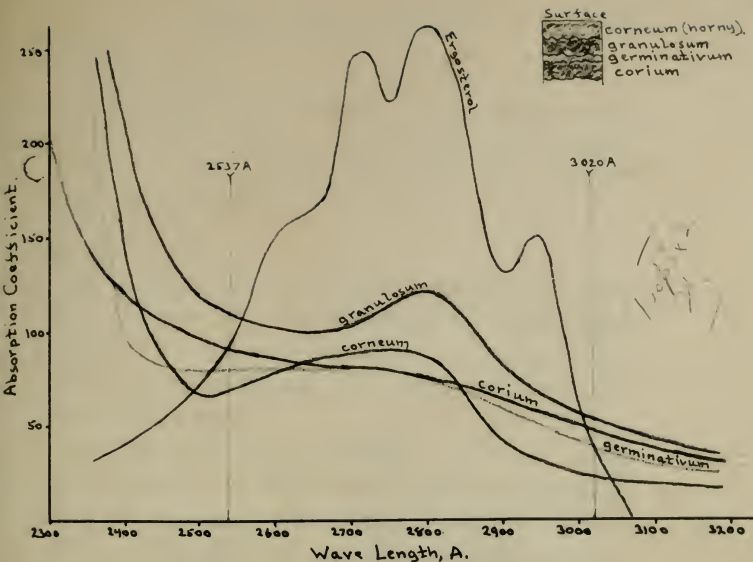
A. Yes. The work of Bachem is recognized to be the best which has been performed on skin transmission. The absorption of ergosterol has been measured by several investigators, without greatly different results.

Q. Along the left hand side of this chart there is the line which marks the boundary of the chart, and the various figures, and the wording, "absorption coefficient"? A. Yes. [353]

(Testimony of Dr. Philip A. Leighton.)

Mr. Lyon: Just a minute. Before we start talking about the exhibit, I think it would be proper to offer it in evidence first and find out if it is admissible in evidence in this case. [354]

(The document heretofore marked "Respondent's Exhibit 2" for identification, was received in evidence.)



Absorption by Skin Layers and by Ergosterol

References: Bachem, Am. J. Physiol., 91, 58 (1929).
 Angus, Proc. Roy. Soc. London, 108B, 340 (1931).

Note that at 2537 A and 3020 A the different skin layers absorb in the same order; viz. granulosum (most), corium, germinativum, and corneum (least).

Note also that absorption by both corneum and granulosum is less at 2537 A than at 2800 A. In other words, 2537 A is actually more penetrating than 2800 A.

Comparing skin absorption with that of ergosterol shows why around 2950 A is most efficient for producing vitamin D. The absorption of the corneum is low in this region, while that of ergosterol shows a peak. The efficiency of vitamin D production should not be greatly different at 2537 A from that at 3020 A.

FEDERAL TRADE COMMISSION

Docket No. 4407 ^{Respondent's Exhibit No. 2}
 IN THE MATTER OF Ultra Violet Product
 DATE 5/24/41 WITNESS Lighter
 REPORTER Jellison
 EMIL E. FISHER & ASSOCIATES, INC.

(Testimony of Dr. Philip A. Leighton.)

Trial Examiner Reardon: I will let the Commission finally rule on this thing by granting the motion to strike which Mr. Lyon will probably make when you finish.

By Mr. Tolin:

Q. I have referred to this left side of your chart here, the part that bears the legend, "Absorption Coefficient", and ask you what is meant by that, and what these figures along that left hand side of the chart mean.

A. The absorption coefficient refers to a term in an equation, a well known equation, which relates the amount of absorption to thickness of layer of any given substance, and the amount of absorption in that equation—the numerical coefficient which expresses that relation is called the absorption coefficient.

Do you wish the equation? [355]

Q. No. Now, in the chart there is one line which is marked 2537-A. What does that mean?

A. That means 2537 angstroms.

Q. There appears to be another line marked 3020-A. What does that mean?

A. 3020 angstroms.

Q. Then there appear to be various colored lines extending across the chart, and one of them is marked "Ergosterol".

A. Yes.

Q. What is the significance of that line?

(Testimony of Dr. Philip A. Leighton.)

A. That is the curve showing the absorption coefficient of ergosterol as a function of wave length.

Q. There is another line there marked "granulosum". What is the significance of that?

A. That is a curve showing the absorption coefficient of the granulosum layer of the skin as a function of wave length.

Q. There is another line marked "corneum". What is the significance of that line?

A. That is a curve showing the absorption coefficient of the corneum layer of the skin as a function of wave length.

Q. There is another line marked, "corium". What is the meaning of that?

A. That is a curve showing the absorption coefficient of the corium layer of the skin as a function of wave length.

Q. There is another line marked, "germinativum." What is [356] the meaning of that?

A. That is a line showing the absorption coefficient of the germinativum layer of the skin as a function of wave length.

Q. Now, can you tell us, Doctor, from your research and study of ultra-violet light, approximately what the effect of that light is, so far as absorption at 2537 angstrom units is concerned?

A. I don't believe I quite understand what you want.

(Testimony of Dr. Philip A. Leighton.)

Q. Well, I will go back here where I have some notes. A. All right.

Q. I will for the time being leave that chart and proceed to another, which I will ask the reporter to mark as Respondent's Exhibit next in order.

(The document referred to was marked "Respondent's Exhibit 3", for identification.)

By Mr. Tolin:

Q. I now ask you what Respondent's Exhibit 3, for identification, is?

A. That is a chart showing the relative efficiencies of different wave lengths in the ultra-violet and the production of erythema, vesiculation of paramécia and bactericidal action.

Q. There appears at the left hand side of this chart a reference from 20 to 100, "relative efficiency." What is the [357] meaning of that?

A. That means the relative lengths of time—the reciprocal of the lengths of time required to produce the same effect at different wave lengths, with the same intensity of the different wave lengths.

Q. At the bottom of the chart there is a line indicating the bottom of the chart, and then various figures, 2300, 2400, 2500 and so on, the last one being 3200. What does that line and those figures represent?

A. Those figures represent wave lengths and angstrom units.

(Testimony of Dr. Philip A. Leighton.)

Q. Of what?

A. Of radiant energy of light.

Q. Do they represent the wave lengths of ultra-violet light? A. Yes.

Q. There appears a line in the chart that is marked, 2537-A. Does that refer to 2537 angstrom units? A. Yes.

Q. Whose work is this chart?

A. The work on the vesiculation is my own, with Professor Giese of Stanford University as a collaborator. The work on erythema is that of Luckiech, Holladay and Taylor. The measurment of bactericidal action is that of Gates.

Q. Is the work, other than that on vesiculation, accepted as standard and fixed observation and knowledge within the field of photochemistry? [358]

A. Yes.

Q. Referring to the work that is represented by Respondent's Exhibit 2, the first chart that I showed you, is the work that is reflected in that chart accepted as standard common knowledge of those subjects in the field of photochemistry?

A. Yes.

Trial Examiner Reardon: Just a minute. Does that include his own work on that chart, as well as those other gentlemen who are not present, that it is accepted?

By Mr. Tolin:

Q. Can you answer that?

A. Yes, I think so.

(Testimony of Dr. Philip A. Leighton.)

Mr. Lyon: You are talking now about Chart No. 1 or Chart No. 2?

Trial Examiner Reardon: No. 2.

By Mr. Tolin:

Q. Now, Doctor, on Respondent's Exhibit 3 there is an erythema line. A. Yes.

Q. And a bactericidal line and a vesiculation line. A. Yes.

Q. Tell us what is meant by this bactericidal line.

A. That shows the relative efficiency of these different wave lengths in reducing the rate of multiplication or division of bacteria. [359]

Q. What is the meaning of the erythema line?

A. That shows the relative efficiency of these different wave lengths in producing the phenomenon of erythema in the skin.

Q. The skin of what? A. Human beings.

Q. What is the meaning of the vesiculation line?

A. That shows the relative efficiency of different wave lengths in producing vesiculation of paramecia.

Q. What is meant by "vesiculation"?

A. Vesiculation is one of the most definite criteria of death in a single cell or in a single celled organ. The cell wall breaks and the protoplasm exudes through the breaks. It can be observed under a microscope. It happens rather quickly, and in the case of these experiments was taken as a criterion of the death of the animal.

(Testimony of Dr. Philip A. Leighton.)

Q. Why were tests of that kind made upon paramecia in order to determine the efficiency of ultra-violet light?

A. Paramecia are a small single celled organism which grow commonly in pond water, and they are particularly favorable organisms for experiments of this kind, because they can be cultured in strains in which the paramecia are all very much alike. They are pure culture, so that the individual effects between different organisms can largely be cancelled out and the true effects of the radiant energy determined. [360]

Q. Is the use of paramecia a generally accepted use in photochemistry for experimentation of that kind? A. Yes.

Q. Is it generally understood that that forms a comparative basis for the computation of those effects upon human cells?

A. Yes. The pseudoplasm and the nuclear protein in the paramecia appears to be not greatly different from that in the cells of the human body.

Q. Now, will you explain Respondent's Exhibit 3, being this second of the charts which I have shown you?

A. If you take the vesiculation curve first, that shows a very low efficiency above 3,000 angstroms. The efficiency increases rapidly below 3,000, reaches a maximum between 2800 and 2900 angstroms, and then drops off slowly at wave lengths below 2800 angstroms.

(Testimony of Dr. Philip A. Leighton.)

The erythema curve begins between 3100 and 3200 angstroms, rises rapidly to a maximum just below 3000 angstroms, drops rapidly to a minimum about 2800 angstroms, and then rises very gradually to another maximum below 2400 angstroms.

The curve of bactericidal action begins at about 3100 angstroms, rises gradually to a maximum about 2700, drops to a minimum about 2400 and rises again down to the limits of which the measurements were made.

Q. Do you know what is commonly known as a sun lamp? Do you know what it is? [361]

A. Yes.

Q. What is a sun lamp?

A. There are different types of sun lamps. Generally, a sun lamp is one which is presumed to reproduce the solar spectrum, the spectrum of the sun.

Q. What is the solar spectrum with respect to ultra-violet light?

A. With respect to ultra-violet light, the solar spectrum decreases rapidly in intensity as one goes towards shorter wave lengths, and the shortest wave length that is found—it depends, of course, on the time of day, and the time of year, and atmospheric conditions, but it is usually between 3000 and 2900 angstroms.

Q. Do you know whether ultra-violet light below 2900 angstroms has ever been observed as emanating from the sun?

A. Yes.

(Testimony of Dr. Philip A. Leighton.)

Q. How low in angstrom units has ultra-violet light been observed emanating from the sun?

A. I believe the lowest figure I have ever seen is 2875 angstroms.

Q. What is the difference, in so far as you can tell us from your studies, of the effect of ultra-violet light at 2537 angstroms and 2900?

A. On vesiculation?

Q. Yes. [362]

A. 2900 is more efficient than 2537.

Q. What would that mean in practical effect upon a subject exposed to the different lights—I should say “subjects”, I suppose, to the different lights?

A. The human subject?

Q. Yes.

A. Now, this vesiculation applies, of course, to paramecia, and in simple language it is effectively a measure of the efficiency of the different wave lengths in the coagulation of protoplasm. In the human subject the efficiency of these wave lengths of the coagulation of protoplasm in the living cells in the skin or in the subcutaneous tissue, for the light which reaches those cells, would not differ greatly from this, but the amount of light which reaches those cells, in turn, is governed by the transmission of the different layers of the skin, so that the result and effect would be made up of an efficiency curve for the light which reaches the living cells and the transmission curves of the different skin layers.

(Testimony of Dr. Philip A. Leighton.)

Q. What are the wave lengths of ultra-violet light that come from sun lamps?

A. No two sun lamps are alike, but, for the most part, the wave lengths are limited to longer than 2900 angstroms.

Q. How long a wave length would be used in a sun lamp,—I mean, would proceed from it?

[363]

A. They will extend up into the infra-red.

Q. Is there any similarity between the effect produced upon a subject exposed to ultra-violet light of 2537 angstrom units, and a subject exposed to ultra-violet light of a sun lamp? A. Yes.

Q. What is the comparison?

A. What is the similarity?

Q. Yes.

A. Both will produce erythema. Both will produce increased vitamin D activity, and both show a bactericidal and a vesiculation action.

Q. What is the comparison between vesiculation action in the use of the sun lamp and vesiculation action in the use of the light from the lamp that emanates a ray of 2537 angstrom units? That is, how do they compare?

A. Once again I must say that no two sun lamps are alike, but, in general, the vesiculation action for 2537 would be greater than that for a sun lamp.

Q. Do you mean to say there would be more vesiculation at 2537 than in the sun lamp?

A. Yes, because most sun lamps of the mercury

(Testimony of Dr. Philip A. Leighton.)

vapor type, the strongest—the greatest intensity in the ultra-violet region which has any effectiveness at all lies above 3000 angstroms, and the efficiency of these different effects for [364] that wave length above 3000 angstroms is small.

Q. What is the difference between the erythema producing power of a sun lamp at, say, 3100—that is a sun lamp length, is it not?

A. 3020 is the line, I would say, that is most characteristic.

Q. Well, let us say between 3020 and 2537?

A. Very nearly the same. 2537 perhaps a little more efficient than 3020.

Q. What is the difference between the bactericidal action of a lamp emitting 3200 angstroms, and one at 2537?

A. You mean 3020 angstroms?

Q. Yes.

A. That at 2537 is much higher.

Q. In a practical way, what would be the difference in its effect upon a human subject of ultra-violet light of the ordinary sun lamp and ultra-violet light from a lamp that emits 2537 angstroms?

A. In a practical way, the chief effect that one would obtain from the ordinary sun lamp would be a coat of tan, and the chief effects one would obtain from the light of 2537 angstroms would be an increased vitamin D activity, erythema and bactericidal action.

Q. Would there be greater bactericidal action

(Testimony of Dr. Philip A. Leighton.)

in a ray of 2537 angstrom units than in a ray of the type that would [365] come from a sun lamp?

A. Yes.

Q. Would there be greater erythema produced at 2537 than from the sun lamp ray?

A. Approximately the same.

Q. Would there be greater vesiculation produced at 2537 than from the sun lamp?

A. Yes.

Q. Now, you have referred to vesiculation as evidence of death of a cell. What would that mean with respect to producing vesiculation in the human being from exposure to 2537 angstrom units of ultra-violet light?

A. That would essentially mean a coagulation of protoplasm in the living cells.

Q. How would I feel if I were to turn such a ray upon myself?

A. It would blister.

Q. The vesiculation from the standpoint of a human being means the ability of the particular lamp used to produce a blister?

A. That would be one way of measuring it.

Q. What would be the vesiculation time of 2537 angstrom units coming from cold quartz held at one inch over the skin, moving about constantly?

A. You mean of the Life Lite type? [366]

Q. Yes.

A. Well over one hour.

Q. If the light were held at a distance of 30 inches from the subject, what would be the vesicula-

(Testimony of Dr. Philip A. Leighton.)

tion time of 2537 angstrom units, and held constantly, that is, not moved about?

A. Thirty inches?

Q. Yes.

A. That would be several hours.

Q. What would be the vesiculation time upon a human being of ultra-violet light, 2537 angstrom units, coming from cold quartz, such as the Life Lite, at 24 inches? A. Twenty-four inches?

Q. Yes.

A. That would also be several hours.

Q. Do you know from your own observation what the Life Lite is? A. Yes.

Q. Have you used a Life Lite? A. Yes.

Q. Have you used it in your studies?

A. Yes.

Q. What is the Life Lite?

A. Life Lite is a quartz tube, containing an inert gas at low pressure, plus a small amount of mercury. An electric [367] discharge is passed between two metallic electrodes at the end of this tube, and under those conditions of presence of an inert gas at low pressure, the radiation which is produced lies mostly at 2537 angstroms, which is one of the wave lengths emitted by mercury.

Q. What would you say would be the effect of taking an ultra-violet light of the hand type Life Lite, and turning it on for one minute, holding the lamp about one-half inch from the skin, passing the lamp over the chest and stomach, distributing the light over the chest and stomach for two minutes?

(Testimony of Dr. Philip A. Leighton.)

Do you think that would be a sufficient effect to produce vesiculation? A. No.

Q. Would it be sufficient to produce erythema?

A. Slight.

Q. Would it be sufficient to result in bactericidal action? A. Yes.

Q. Would it be sufficient to activate vitamin D?

A. Yes.

Q. Would your answer be any different if I were to change that from a two minute exposure to a three minute treatment?

A. Well, you would get more erythema, more vitamin D activity, more bactericidal action, but you still would not get vesiculation.

Q. Would your answer be any different, if I were to change [368] the exposure time to six minutes? A. No.

Q. Would there not be increased vitamin D activation? A. Yes.

Q. When you say your answer would not be any different, you mean there would be an increase in erythema, vitamin D activation, bactericidal action, but no different answer so far as vesiculation is concerned? A. That is right.

Q. Would that also be true as to a seven minute exposure? A. Yes. [369]

Mr. Tolin: I am not sure if Respondent's Exhibit 3 has been offered in evidence.

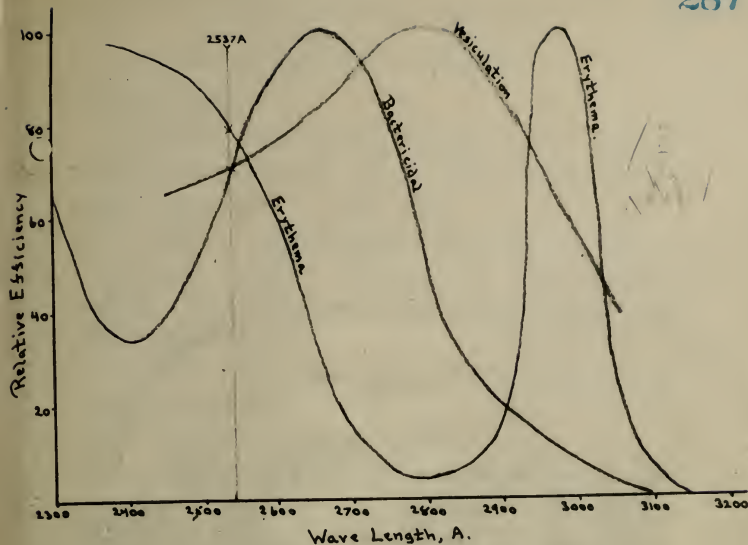
Trial Examiner Reardon: I have no record of its being offered.

Mr. Tolin: I offer it in evidence at this time.

(Testimony of Dr. Philip A. Leighton.)

Mr. Lyon: I renew my objection to that exhibit, as well as the previous one, for the reason indicated, as being hearsay. [373]

(The document heretofore marked "Respondent's Exhibit 3", for identification, was received in evidence.)



Relative Efficiencies as a Function of Wave Length for
Erythema Production, Vesiculation of Paramecia, and Bactericidal Action.

References: Erythema: Luckiesh, Holladay, and Taylor, J. Opt. Soc. Am.,
 20, 423 (1930).

Bactericidal: Gates, J. Gen. Physiol., 14, 31 (1930).

Vesiculation: Giese and Leighton, J. Gen. Physiol., 18, 557 (1935).

FEDERAL TRADE COMMISSION

Exhibit No. 4407 ~~Case No.~~ Respondent's Exhibit No. 3
 IN THE MATTER OF Ultra-Violet Products
 LATE John WITNESS Leighton
 REPORTER John
 FRANK E. FISHER & ASSOCIATES, INC.

(Testimony of Dr. Philip A. Leighton.)

By Mr. Tolin:

Q. Have you yourself studied wave lengths in ultra-violet radiation between 3000 angstroms and 2540 angstroms? A. Yes.

Q. In your own studies of those wave lengths, is there any specific difference in the radiations around 3000 angstroms and the radiations around 2540 angstroms?

A. No. There are relative differences, but no specific differences.

Q. What are the relative differences?

A. The relative differences are that certain wave lengths will be more effective—more efficient for one thing, and other wave lengths will be more efficient for another.

Q. Now, how is that shown on the chart, taking the curve of [374] ergosterol and bactericidal action, and so on?

A. That is shown on the basis of these curves of relative efficiencies against wave lengths.

Q. Can you show on the chart the absorption curve of the skin for 2540 angstroms and 3020 angstroms, and state if there is any reason why one might be more effective than the other, and state the nature of it, considering exposure time in that answer?

A. The absorptions of the different layers of the skin come in the same order at 2537 angstroms as at 3020 angstroms. The most strongly absorbing layer is the granulosum, the next is the corium, the next is the germinativum, and the least strongly

(Testimony of Dr. Philip A. Leighton.)

absorbing layer of these two wave lengths is the corneum. On that basis there is no distinction to be made between these two wave lengths. [375]

Q. Does ultra-violet light of 2537 angstroms, such as comes from the respondent's product, Life Lite, produce vitamin D activation? A. Yes.

Q. What is vitamin D activation?

A. That is a name applied to an increased anti-rachitic activity in the body or in animals.

Q. Does that include some influence on calcium and phosphorus in the blood of the animal? [379]

A. Yes. The calcium phosphorous metabolism is influenced by a change in vitamin D activity.

Q. Does that increase in calcium phosphorous metabolism affect the body chemistry?

A. Yes.

Q. Then would you say that ultra-violet light, such as emanates from the respondent's product, does have an effect upon body chemistry?

A. Yes.

Q. And that effect is what?

A. Well, through the increased vitamin D activity and its influence on the calcium phosphorous metabolism, the one chemical effect—erythema, of course, is simply a chemical effect in the body. Vesiculation also is a chemical effect.

Q. It is true, though, is it not, that the wave length, 2540 angstroms, is more efficient in producing erythema than the wave length at 3000 angstroms?

(Testimony of Dr. Philip A. Leighton.)

Mr. Lyon: I object to that question as leading the witness. I think the question should be re-phrased.

Trial Examiner Reardon: I will sustain the objection.

By Mr. Tolin:

Q. What is the comparative efficiency of 2540 angstroms and 3000 angstroms, as to erythema production?

A. Very nearly the same. [380]

Q. What is the comparative efficiency of the wave lengths, 2540 angstroms and 3000 angstroms, in vitamin D activation?

A. That is not definitely known. It has been established that all wave lengths through this region produce vitamin D, but, to my knowledge, a good relative efficiency curve has not yet been established for vitamin D production.

Q. Is there a harsh effect produced by wave lengths below 2800 angstroms that does not result from wave lengths that are longer? A. No.

Q. The answer is "no"?

A. That is right.

Q. Will you explain then how it can be that a person might produce an erythema with respondent's product within a short exposure, but that it would require a considerably longer exposure to obtain a like erythema from exposure to the sun?

A. The intensity in respondent's product, the intensity reaching the skin when the lamp is held close up is much greater than the intensity of the

(Testimony of Dr. Philip A. Leighton.)

wave lengths in this region reaching the skin from the sun.

Q. Are the results from a short exposure with a Life Lite, an exposure sufficient to produce erythema, bactericidal action, vitamin D activation, any different from exposure to the sun for a long enough period of time to produce light [381] erythema, and bactericidal action, and vitamin D activation?

A. I would say that the amount of vitamin D activation would be about the same for the same erythema production. The amount of bactericidal action would be greater for the respondent's product than for the sun.

Q. What about vesiculation?

A. Vesiculation without tremendous over-exposure would be negative in either case.

Q. Do you recognize any distinction between a therapeutic lamp and a sun lamp? Do you know of a classification of one type of these ultra-violet lights known as a therapeutic [382] lamp and another as a sun lamp?

A. The classification that I have seen used has a division as between wave lengths. A sun lamp emits no wave lengths—no radiation of wave lengths shorter than those found in the sun light. A therapeutic lamp does.

Q. Is a cold quartz light, of the type that respondent manufactures considered a therapeutic lamp? A. On that basis, yes.

Q. Is there any basis for a statement that the rays emitted from a therapeutic lamp possess bac-

(Testimony of Dr. Philip A. Leighton.)

tericidal properties that are not comparable to the rays emitted by natural sun light? A. No.

Q. Is that answer based upon your own knowledge or are you quoting from the work of someone else?

A. If you refer only to bactericidal action?

Q. Yes.

A. That is quoting from the work of other people.

Q. Is that general knowledge within the science of body chemistry?

A. That is general knowledge.

Trial Examiner Reardon: Is it based upon the work of other people, rather than quoting from them? He has spoken of his own knowledge, and his knowledge extends beyond the knowledge that he has from the work that he has [383] done through the literature, but you can let it go on that.

By Mr. Tolin:

Q. Do you appreciate that distinction, Doctor? Of course, we know of our own knowledge a lot of things that are not the results of our own individual research—— A. Yes.

Q. ——but which are accepted knowledge, according to the understanding which we have of a given subject. A. That is right.

Q. Now, can you tell us whether your answer was based upon your own knowledge or not?

A. It was based on my own knowledge, but not on my own work.

(Testimony of Dr. Philip A. Leighton.)

Q. Are therapeutic lamps not suitable for the same types of uses as sun lamps? A. No.

Q. That question is rather badly worded. I should say: Are therapeutic lamps suitable for the same types of uses as sun lamps? A. Yes.

Q. Is that answer based upon your own knowledge?

A. Yes. With one exception perhaps, the sun lamp is better for producing a coat of tan.

Q. Is that the only distinction between the therapeutic lamp and the sun lamp?

A. To my knowledge, that is the only distinction. [384]

Q. Isn't there also the distinction that with the sun lamp it is necessary to use it longer in order to obtain a result that could be obtained with a therapeutic lamp with a shorter exposure?

A. That, of course, depends upon the intensity of the sun lamp, as compared to the cold quartz lamp, and the distance which the two are maintained from the body. [385]

Q. Is it true that the respondent's device will not give benefits to the skin and the general health that are given by natural sun light?

A. Based on the best established evidence which is available, the answer is no.

Q. Are the ultra-violet rays emitted from respondent's device comparable to the ultra-violet rays emitted from natural sunlight?

A. Comparable, yes.

Q. Are such ultra-violet rays identical to those

(Testimony of Dr. Philip A. Leighton.)

that are emitted from natural sunlight, except as to wave length?

A. Well, I can't say yes or no to that question. They differ in wave lengths, and they differ in their frequency, and they differ in their relative effects. They don't differ, so far as I know, in any specific effects.

Q. Would you say that ultra-violet rays emitted from respondent's product are comparable to the ultra-violet rays [388] emitted by natural sunlight?

A. Yes.

Q. As to specific effects that are known, is there any distinction in such specific effects upon the human being?

A. No, I know of no effect that is produced by the ultra-violet in sunlight that is not also produced by 2537 angstroms.

Q. Are there any effects that are produced by 2537 angstroms that are not produced by natural sunlight?

A. No, not that I know of.

Q. Are there any effects that are produced by 2537 or 2540 angstrom units, that are not produced by 3100 angstrom units?

A. Possibly bactericidal action.

Q. In what way is bactericidal action possibly different?

A. That the efficiency at 3100 angstroms is very low for bactericidal action.

Q. Have you completed your research and study of ultra-violet light?

A. No.

(Testimony of Dr. Philip A. Leighton.)

Q. How recently have you devoted any time to that study?

A. Oh, within the past week.

Q. Is that a subject of continued research in your department at Stanford University?

A. Yes.

Q. Is the information which you have given us here the latest available information upon the subject? [389]

A. Yes.

Q. Do you keep up with the subject, as it is studied in places other than Stanford University?

A. I try to.

Q. Aren't you at the present time co-authoring a book upon this subject with a professor from another university?

A. Yes.

Q. What is that work?

A. It is a book entitled, "The Photochemistry of Gases," to be published under the auspices of the American Chemical Society.

Q. Who is the co-author?

A. Professor W. A. Noyes, Jr., the executive head of the department of chemistry at the University of Rochester.

Q. Has that book actually been published?

A. Not yet.

Q. Is it in process of publication, or are you preparing it for publication?

A. It is in process. It should appear within the next two or three months.

Q. How long a book is that? Is it a pamphlet or a full length book?

(Testimony of Dr. Philip A. Leighton.)

A. It is about 465 pages, I believe.

Q. Do you teach a class in photochemistry?

A. Yes. [390]

Q. Does that include the study of ultra-violet light?

A. Yes. Most of it is concerned with ultra-violet light.

Q. Is there any other class in photochemistry at Harvard that is, other than the one taught by you?

A. You mean at Stanford?

Q. Pardon me. At Stanford?

A. Professor Giese teaches a course in photobiology, which overlaps to some extent with my course.

Q. Those are courses that supplement each other, are they? A. Yes.

Q. Doctor as to these two charts that I have introduced into evidence and have shown you here this morning, can you say whether those charts are considered basic in the field of photochemistry?

A. Yes, they are. The photochemist differs from the biologist or from many biologists, in that he wishes to express information, as far as possible, which is divorced from the physiological or biological effects; in other words, which is divorced as far as possible from the specific effects which arise from the fact that the organism is living. Among these effects which can be so divorced are absorption curves—with respect to radiation are absorption curves and efficiency curves for certain actions.

Q. Then would you say that the matter that is

(Testimony of Dr. Philip A. Leighton.)

represented in those charts, Respondent's Exhibits 2 and 3, are matters [391] within your own knowledge?

A. I would say that these are facts, not opinions.

Q. Are they accepted as such by photochemists in general? A. Yes.

Q. They are in your study as basic as the law of gravity is in the study of physics?

A. That is right.

Q. Is it possible to answer the question which I have propounded to you, about the use of cold quartz light and its effect and the use of lights of other wave lengths, without using the information that is reflected in the charts, Exhibits 2 and 3?

A. No.

Mr. Lyon: Meaning, so far as the present witness is concerned? Is that your question?

Mr. Tolin: No. So far as the question's being accepted upon a basis of scientific knowledge.

The Witness: I don't think anyone could answer those questions without having the knowledge which, as you say, is contained in these charts.

Trial Examiner Reardon: That still does not qualify those exhibits, because while he could not answer without the information he sees in those charts, counsel for the Commission contends the information in those charts, if admissible, should be put in in a way that would render [392] the evidence admissible. That is the reason I granted the motion to strike the exhibits and the testimony relating to them.

(Testimony of Dr. Philip A. Leighton.)

By Mr. Tolin:

Q. Well, Doctor, is that information which is reflected in the charts, Exhibits 2 and 3, information within your own knowledge? A. Yes.

Q. Then your answers here have been based upon your own knowledge, rather than upon the charts, as such?

Mr. Lyon: Just a minute. I think we are getting into the field of self-serving declarations. I think the facts speak for themselves. I object to that last question as argumentative and speculative.

Trial Examiner Reardon: I will sustain the objection. He did not prepare the charts, or the information in the charts was not prepared by him.

Mr. Tolin: He said that some of it was.

Trial Examiner Reardon: Yes. Some would not make the whole chart admissible. If it is inadmissible for one reason, it is inadmissible.

By Mr. Tolin:

Q. I will ask you, Doctor, if the two papers that are before you, Exhibits 2 and 3, were prepared by you? A. Yes. [393]

Q. From what were they prepared?

A. I took the information directly from the original papers and literature.

Q. What original papers and literature?

A. The papers that are referred to on these charts. I have one of them in my briefcase now.

Mr. Tolin: Yes. I will ask to have this marked for identification as the Respondent's exhibit next in order.

(Testimony of Dr. Philip A. Leighton.)

(The document referred to was marked "Respondent's Exhibit 4", for identification.)

By Mr. Tolin:

Q. I show you Respondent's Exhibit 4, for identification, which appears to be a chart in the Archives of Physical Therapy, and ask you if you recognize that as either being or not being one of the basis charts used in the subject?

Mr. Lyon: That is objected to. [394]

Mr. Tolin: I will put it in a different way, and ask him what that is.

Trial Examiner Reardon: That objection will be overruled at the present time. You may answer yes or no. I think that will answer it.

The Witness: That is——

Trial Examiner Reardon: You may answer yes or no, I think.

Mr. Tolin: He is allowing you to answer the first question.

The Witness: What was the first question?

Trial Examiner Reardon: Read it, please.

(The question referred to was read as follows:

"Q. I show you Respondent's Exhibit 4, for identification, which appears to be a chart in the Archives of Physical Therapy, and ask you if you recognize that as either being or not being one of the basic charts used in the subject?")

The Witness: That is. I answer that: Yes, that is.

(Testimony of Dr. Philip A. Leighton.)

By Mr. Tolin:

Q. Will you explain this chart, Respondent's Exhibit 4, for identification?

Mr. Lyon: Just a minute. I object to all testimony with reference to this chart as not being proper testimony, and object to the chart itself as being hearsay. [395]

Mr. Tolin: I offer the chart in evidence as Respondent's Exhibit 4.

Trial Examiner Reardon: What is this thing you call the Archives of Physical Therapy, or, Physiotherapy, I guess it is.

The Witness: That is one of the recognized scientific journals.

Trial Examiner Reardon: It is a journal?

The Witness: It is a journal.

Mr. Tolin: Printed in that journal appears this chart by way of illustration of an article.

Trial Examiner Reardon: I will have to sustain the objection to the admission in evidence of the chart as Respondent's Exhibit 4.

Mr. Tolin: He has testified that it is one of the basic charts of that particular science. I am not offering the Journal of Physical Therapy, but simply that, in order to adduce the chart that I found printed in one of those Journals, just as effectively as if the witness had written it out.

Mr. Lyon: I object to counsel testifying.

Trial Examiner Reardon: Well, he isn't testifying. I will let my ruling stand on that.

(Testimony of Dr. Philip A. Leighton.)

Mr. Tolin: Very well. May this be marked Respondent's Exhibit 5, for identification? [396]

(The document referred to was marked "Respondent's Exhibit 5", for identification.)

By Mr. Tolin:

Q. I show you a piece of paper which is marked Respondent's Exhibit 5, for identification, and ask you whose writing appears upon that, if you know?

A. That is mine.

Q. What is that?

A. That is a reproduction of the best present established average values of transmission of radiation of different wave lengths by the different layers of the skin.

Q. From what did you prepare that?

A. From what?

Q. Yes.

A. I prepared that from a paper by Bachem and Reed in the American Journal of Physiology.

Q. Is Bachem and Reed's paper their report of opinion, or is that merely an assembling of the known facts in the science, as, for instance, in the science of mathematics, if I were to write a multiplication table, I would be assembling known facts?

A. That is a report of original work.

Q. Of Bachem and Reed?

A. Of Bachem and Reed.

Mr. Tolin: I offer it as Respondent's Exhibit 5. [397]

Mr. Lyon: I object to it as hearsay.

(Testimony of Dr. Philip A. Leighton.)

Trial Examiner Reardon: I sustain the objection. [398]

Mr. Lyon: At this time, if the Examiner please, I move to strike Respondent's Exhibits 2 and 3, and all testimony based thereon, as being hearsay and, furthermore, that all testimony with reference to the vesiculation experiments is not material or relevant to the issues in this case.

Trial Examiner Reardon: I will grant the motion to strike Respondent's Exhibits 2 and 3, and the testimony which is connected with those exhibits, directly connected with them. I will not strike the testimony relating to vesiculation. I will overrule the motion to that extent. [399]

Trial Examiner Reardon: I will let the ruling stand and exclude that exhibit, as has been my ruling, as a whole, and I will also include in the granting of the motion to strike the testimony of the witness on vesiculation, in so far as that testimony refers to Respondent's Exhibit 3. [401]

(A short recess was taken.)

By Mr. Tolin:

Q. Doctor, do you know what the absorption by skin layers and by ergosterol is of ultra-violet light of various wave lengths? A. Yes.

Q. Can you tell us what the absorption by ergosterol is between the wave lengths, approximately 2400 and approximately 3100?

A. It is relatively small at 2400, increases toward longer wave lengths, shows a double maximum in the region around 2700 or 2800, shows a smaller

(Testimony of Dr. Philip A. Leighton.)

maximum between 2900 and 3000, decreases to zero in the neighborhood of 3100.

Q. Can you tell us about what it is at 2537 angstroms? [402]

A. At 2537 it is approximately the same that it would be for 2900—or, approximately the same as it would be for 3000. The figures, I couldn't quote the exact figures at 2537.

Q. That is, 2537 and 3020 are approximately the same?

A. Approximately the same. It would be a little higher at 2537 than at 3020.

Q. What is corneum?

A. Corneum is the outer or horny layer of the skin. [403]

Q. Does corneum absorb ultra-violet?

A. Yes.

Q. How much ultra-violet light does corneum absorb between 2400 angstrom units of light and 3100 angstroms of light, or thereabouts?

A. Well——

Q. I mean, angstrom units of light.

A. Yes. Well, the absorption is quite low above 3100. Below 3100 it increases to a maximum at about 2800, drops to a minimum at about 2500, and then increases again quite rapidly below 2500.

Q. What is the comparative absorption of ultra-violet light by the corneum between 2537 angstroms and 3000 angstroms?

A. Slightly greater at 2537, but not markedly greater.

(Testimony of Dr. Philip A. Leighton.)

Q. What is granulosum?

A. Granulosum is the next layer underlying the corneum.

Q. Does granulosum absorb ultra-violet light?

A. Yes.

Q. Beginning at about 2400 angstroms and on up to about 3100 angstrom units, what is the absorption of ultra-violet light by granulosum?

A. Granulosum also absorbs strongly at 2400. The absorption decreases in the longer wave lengths to a minimum in the neighborhood of 2500. It increases to a maximum, not as pronounced I believe as the maximum for corneum, around 2800 [404] or 2900, and decreases again at longer wave lengths.

Q. What is the comparative absorption of ultra-violet light by granulosum at 2537 angstrom units and at 3000 angstrom units?

A. Slightly greater at 2537, but not markedly different.

Q. What is germinativum?

A. Germinativum is the germinative layer which lies directly under the granulosum.

Q. Does germinativum absorb ultra-violet light?

A. Yes.

Q. Beginning at approximately 2400 angstrom units of such light to 3200 angstrom units of such light, what is the germinativum absorption thereof?

A. It absorbs quite strongly at 2400, and the absorption decreases as one goes towards longer wave lengths.

(Testimony of Dr. Philip A. Leighton.)

Q. What is the comparative absorption of ultra-violet light by germinativum at 2537 angstrom units and at 3000 angstrom units?

A. Slighter greater at 2537.

Mr. Tolin: Will you read the answer, please?

(The answer referred to was read.)

By Mr. Tolin:

Q. What is corium? A. Corium——

Mr. Lyon: He has already answered that. Or, was [405] that corneum?

The Witness: Corneum.

Mr. Lyon: Corium is something else?

The Witness: Yes.

Mr. Lyon: All right.

The Witness: Corium is the layer underlying the germinativum. It is the layer which carries the maximum number of living cells, and also the layer in which the vitamin D activity is produced.

By Mr. Tolin:

Q. Does corium absorb ultra-violet light?

A. Yes.

Q. What is the absorption of ultra-violet light by corium between 2400 angstrom units of such light and 3200 units of such light?

A. It is quite high at 2400, drops to longer wave lengths; about 2500 it becomes very nearly constant for several hundred angstroms, then drops again at still longer wave lengths.

Q. What is the comparative absorption of ultra-violet light by corium as between angstrom units, 2537 and 3000?

(Testimony of Dr. Philip A. Leighton.)

A. It would be slightly greater at 2537.

Q. Now, in respect to their position in the skin is corneum the outside layer? A. Yes. [406]

Q. Have you testified as to the absorption of corneum, as it would absorb were the light applied to the corneum without having to penetrate some other substance? A. Yes.

Q. In your testimony as to the absorption of ultra-violet light by granulosum, have you testified there with consideration to the fact that the ultra-violet light would travel through some other substance before reaching granulosum? A. No.

Q. Haven't you contemplated that it would travel through corneum?

A. No. That is the absorption by granulosum itself.

Q. Is that true also as to germinativum?

A. Yes.

Q. And to corium? A. Yes.

Q. What is ergosterol?

A. Ergosterol is a member of a chemical family of substances known as sterols.

Q. Where is it found in the skin, if at all?

A. If at all, it is found chiefly in the corium layer.

Q. Is there any doubt as to whether it is found in the corium?

A. Well, there are several sterols found in the skin, and there is sometimes doubt as to which they might be. [407]

(Testimony of Dr. Philip A. Leighton.)

Q. What is the absorption by ergosterol of ultra-violet light?

A. I think I answered that.

Q. Yes, that is right. That was the first one I inquired about. Have you, of your own knowledge, tabulated the matter which you just testified to on paper?

A. Yes.

Q. I show you now Respondent's Exhibit 2, and ask you if that is a tabulation of your own knowledge, by way of resume, of what you have testified to?

Mr. Lyon: Just a minute. He has already testified with reference to Respondent's Exhibit 2, as being a compilation of information from other sources. If counsel is trying to change his testimony in that regard, why, I think such a question would be inadmissible at this time.

Mr. Tolin: I am not trying to change his testimony. He has now added to it and if it answers——

Trial Examiner Reardon: I will overrule the objection. He may answer.

The Witness: Could I have the question again now?

(The question referred to was read.)

The Witness: Yes.

Mr. Tolin: I offer Respondent's Exhibit 2 in evidence.

Mr. Lyon: I object. [408]

Trial Examiner Reardon: I make the same ruling, and give you an exception.

(Testimony of Dr. Philip A. Leighton.)

By Mr. Tolin:

Q. Do you know the relative efficiency as a function of wave lengths of erythema production, vesiculation of paramecia, and bactericidal action—— A. Yes.

Q. ——of ultra-violet light? A. Yes.

Q. As to erythema production, will you tell us the relative efficiencies between 2400 angstrom units and 3200 angstrom units?

A. The efficiency is relatively high at 2400; with increasing wave lengths the efficiency drops to a minimum around 2700 angstroms. It rises to a sharp maximum between 2900 and 3000 angstroms, and drops rapidly above 3000 angstroms to zero at approximately 3100 angstroms.

Q. What is the comparative efficiency between 2537 angstrom units and 3100?

A. 2537 would be very much more efficient than 3100.

Q. Do you know the relative efficiencies as a function of wave lengths for vesiculation of paramecia?

Mr. Lyon: Just a minute. That is objected to as irrelevant to the issues in this case.

Trial Examiner Reardon: I will overrule the [409] objection.

The Witness: The answer is "yes."

By Mr. Tolin:

Q. What is it between 2400 angstrom units and 3200?

(Testimony of Dr. Philip A. Leighton.)

A. Beginning at 2400 and going to the longer wave lengths, the efficiency of vesiculation increases to a maximum around 2800 angstroms. It decreases at longer wave lengths.

Q. Between 2537 angstroms and 3000 angstroms, what is the comparative vesiculation power?

A. At 3000 the vesiculation power would be somewhat higher than at 2537, but not markedly different.

Q. Do you know the relative efficiencies as a function of wave lengths for bactericidal action of ultra-violet light? A. Yes.

Q. What is it as between 2400 angstroms, or, I will change that. What is it as between 2300 angstrom units and 3100 angstrom units? [410]

A. The efficiency, starting from the lower limit of observation of 2300 angstroms, the efficiency decreases at longer wave lengths to a minimum at about 2500 angstroms, increases to a maximum between 2600 and 2700 angstroms, then drops off in longer wave lengths and approaches zero at wave lengths around 3000 to 3100.

Q. What is the comparative efficiency of bactericidal action between 2537 angstroms and 3000?

A. It is considerably higher at 2537.

Q. Have you tabulated the results of your study as to these relative efficiencies and made, for your own convenience, a table showing them?

A. Yes.

Q. I show you Respondent's Exhibit 3, and ask you if you recognize that as the table to which you have referred?

(Testimony of Dr. Philip A. Leighton.)

Mr. Lyon: That is objected to.

Trial Examiner Reardon: Well, he can show him.

Mr. Lyon: All right.

(The document referred to was handed to the witness.)

The Witness: Yes, that is one which I prepared.

Mr. Tolin: I offer Respondent's Exhibit 3 in evidence.

Mr. Lyon: I object to it.

Trial Examiner Reardon: The objection is sustained.

Mr. Tolin: When the Examiner ruled upon Respondent's [411] Exhibit 6, this article, did you understand that the witness was a co-author of the article?

Trial Examiner Reardon: Yes.

Mr. Tolin: Very well. Then I will not re-offer it.

I am not sure whether the matter I am about to inquire into has been stricken or not, so as a matter of caution, I will ask him again.

By Mr. Tolin:

Q. Can you state whether there is any specific difference between radiation of ultra-violet light at either 2540 angstrom units or 3000 angstrom units, so far as results from these wave lengths are concerned? A. No specific differences.

Q. Is there any basis in fact for an assertion that wave lengths of ultra-violet light above 2800

(Testimony of Dr. Philip A. Leighton.)

angstrom units are drastically different in effects from wave lengths below 2800 angstrom units?

A. No.

Trial Examiner Reardon: What do you understand by "drastically"?

The Witness: Appreciably.

Trial Examiner Reardon: Appreciably?

The Witness: Markedly.

Trial Examiner Reardon: In other words, is there [412] any difference?

Mr. Tolin: I was going to ask that.

Trial Examiner Reardon: If you are going into it, all right.

By Mr. Tolin:

Q. Is there any basis in fact to assert that wave lengths of ultra-violet light above 2800 angstrom units are different in effects than wave lengths below 2800 angstrom units?

Mr. Lyon: That is objected to as being immaterial to the issues in this complaint.

Trial Examiner Reardon: Objection overruled. You may answer.

The Witness: There are relative differences between different wave lengths.

By Mr. Tolin:

Q. What are they?

A. The wave lengths around 2900 to 3000 angstroms and wave lengths around 2600 angstroms are the most efficient for producing erythema. The wave lengths around 2600 to 2700 angstroms are the most

(Testimony of Dr. Philip A. Leighton.)

efficient for producing bactericidal action. The wave lengths around 2800 are most efficient for producing vesiculation.

Q. What will determine the difference in result from irradiation of a human being with a wave length of ultra-violet light at about 2540 angstrom units and that at about [413] 3000?

A. First, the relative intensities of the two sources which are used; secondly the relative absorption of the different layers of the skin for these different wave lengths; third, the relative absorption of such substance as ergosterol absorption, which produces specific effects within the skin.

Mr. Tolin: You may cross examine. [414]

Cross Examination

By Mr. Lyon:

Q. How long have you been teaching at Stanford University, Doctor? A. Since 1928.

Q. What courses have you been teaching during that period?

A. I have been teaching general chemistry regularly, and photochemistry every second year, with an advanced course in atomic and molecular structure alternating with the photochemistry, and I have also taught courses in photography and advanced economic chemistry, and in chemical kinetics.

Q. You are at present head of the department of chemistry, are you? A. Yes.

Q. Have any of those courses dealt primarily with physiotherapy—— A. No. [415]

(Testimony of Dr. Philip A. Leighton.)

Q. ———or ultra-violet therapy at all?

A. No.

Q. I believe you stated that that did come in incidentally in one of the courses; is that correct?

A. That is right.

Q. And what course was that?

A. Photochemistry.

Q. And you give that every second year?

A. That is right.

Q. Is that a lecture course, or——

A. That is a lecture course.

Q. Prior to coming to Stanford, you were at Harvard University, I understand. Is that correct?

A. Yes.

Q. What did you teach there?

A. I taught quantitative analysis there.

Q. You taught no course there dealing with ultra-violet therapy? A. No.

Q. What research, if any, have you done personally in connection with light therapy?

A. In connection with light therapy?

Q. Yes.

A. I have made an investigation of the relative efficiencies of different wave lengths on vesiculation, and also on the [416] immobilization of paramecia. I have made investigation of long wave length limits of photolethal action in the ultra-violet.

Q. Photolethal action? A. Photolethal.

Q. What do you mean by that?

(Testimony of Dr. Philip A. Leighton.)

A. The wave length limit which has the power to kill a cell, a living cell.

Q. When did you make that research?

A. That has all been made within the past ten years.

Q. And all at Stanford University?

A. All at Stanford.

Q. Now, as I understand it, those researches have dealt exclusively with the vesicular action and photolethal action of ultra-violet radiation; is that correct?

A. One part of our investigation was simply on the immobilization of those small organisms, paramecia, by light.

Q. And what do you mean by "immobilization"?

A. That is the loss of their power to propel themselves, to move.

Q. That is a branch of the photolethal action, would you say?

A. Yes.

Q. And also the vesicular action?

A. That is right. [417]

Q. It would all come generally under the head of vesiculation?

A. Under the head of photolethal action.

Q. Photolethal action. That is the general type?

A. Yes.

Q. I believe you stated that you had not studied or had any research particularly in ultra-violet radiation, so far as bactericidal action was concerned?

A. No, I have done none of that.

Q. You didn't go into that at all?

A. No.

(Testimony of Dr. Philip A. Leighton.)

Q. You didn't go into the research as to the penetration of the ultra-violet rays into the skin?

A. No, I have done none of that.

Q. Your testimony this morning along that line has been based upon your reading, has it?

A. Reading and discussions with other people in the field.

Q. And not upon any personal observation?

A. Not upon any personal research.

Q. Would that also be true so far as your testimony with reference to the production of erythema by ultra-violet radiation is concerned?

A. Not entirely. I have made some personal observations on that, although they have not been published.

Q. Just what was your research in reference to that? [418]

A. Well, of course, a part of my work is the use of various ultra-violet sources and studies of the effects of different wave lengths, and I have tried upon my own skin the effectiveness of different lines of—different radiations given out by the mercury arc.

Q. Now, what are the principal sources of ultra-violet radiation, Doctor?

A. The principal sources?

Q. Yes.

A. Well, I would say the quartz mercury arc is the most commonly used source. The carbon arc is also commonly used. The sun, of course, is one source of ultra-violet radiation, and various electric

(Testimony of Dr. Philip A. Leighton.)

sparks between metals are powerful in ultra-violet rays. Various discharges through gases other than mercury give ultra-violet rays.

Q. Would you say that the sun was the chief source of natural ultra-violet radiation?

A. I would say the sun is the only source of natural ultra-violet radiation.

Q. That is, other methods of producing ultra-violet radiation would be artificial; is that correct?

A. Yes.

Q. That is, the quartz mercury arc and the carbon arc and other methods?

A. Those are artificial sources. [419]

Q. Now, is there more than one kind of quartz mercury arc?

A. Yes. There are, I would say, probably a dozen different kinds.

Q. How are those classified?

A. Well, one could classify them according to whether they are low pressure or high pressure arcs, or as to whether they are direct current or alternating current arcs, or as to whether they are low temperature or high temperature arcs.

Q. Are you familiar with a distinction made between a hot quartz and a cold quartz—

A. Yes.

Q. —ultra-violet lamp? A. Yes.

Q. What is the basis of that classification?

A. That classification is based chiefly on the temperature which the arc obtains in operation.

(Testimony of Dr. Philip A. Leighton.)

Q. That is, the cold quartz is the low temperature? A. Yes.

Q. And the hot quartz is the high temperature? Is that correct? A. That is right.

Q. Now, for your information, Doctor, it has been testified that the lamp produced and sold by the respondent in this proceeding emits ultra-violet radiation of wave lengths, as follows: [420]

2540 angstrom units, 89.2 per cent; wave lengths of 2960 to 3020 angstrom units, .6 per cent; wave lengths of 3132 angstrom units, 1.8 per cent; wave lengths of 3660 angstrom units, 1.5 per cent; visible light and heat, 6.9 per cent; total 100 per cent.

Now, are you familiar with a lamp with those ultra-violet radiations? A. Yes.

Q. How would you classify that?

A. That is a cold quartz lamp.

Q. Are all cold quartz types of lamps the same, so far as their ultra-violet radiation is concerned?

A. I think one should specify further and say that it is a cold quartz mercury lamp, because there are other cold types of discharge which involve other things than mercury and get different types of radiation.

Q. Now, are you familiar with the construction and method of operation of such a lamp?

A. Yes.

Q. Will you state just what is the construction of such a lamp and the principle upon which it operates?

(Testimony of Dr. Philip A. Leighton.)

A. Well, it consists of a quartz tube, the dimensions of which are not specific, and an electrode of some relatively inert metal, such as tungsten or tellurium or sometimes nickel, used at each end of the tube. The tube contains [421] an inert gas, such as argon, at very low pressure. The pressure usually runs from two to ten millimeters of inert gas, plus just a small amount of mercury.

In starting the lamp, the lamp is commonly connected up to what is known as a high reactance transformer of a type which submits or which feeds a high voltage across the terminals when the current, when the electricity is turned on. As soon as the lamp starts carrying the current the voltage drops down to a much lower value than the original starting voltage, and usually reaches what we call a steady state, at which there are no changes, after a few minutes. The voltage will then run somewhat of the order, in an arc ten centimeters long, perhaps 200 volts, and the current something of the order of 50 to 100 milliamperes.

This cold quartz type of mercury arc differs considerably in the specifications of the current and voltage under which it operates.

Q. They do not produce much heat or light; is that correct?

A. They don't produce much heat and they don't produce much visible light.

Q. How about infra-red rays? Do they produce any of those? A. No.

Q. None at all?

(Testimony of Dr. Philip A. Leighton.)

A. Very little. It is one of the most efficient sources of ultra-violet radiation that has ever been constructed. [422]

Q. But not of infra-red rays? A. No.

Q. What is your definition of the infra-red ray?

A. That is one which lies at such long wave lengths that it is not visible to the eye, and yet at not such long wave lengths that it can be produced by the methods which are used to produce radio waves.

Q. Now, what is your definition of an ultra-violet ray?

A. That is one which lies at such short wave lengths, that is, it is not visible to the eye, and yet at not such short wave lengths that it can be used by the method to produce x-rays.

Q. What is a wave length, doctor?

A. A wave length is a term which originates from the term, "theory of light," and that the light or radiant energy is propagated in some such fashion that a wave motion is associated with that propagation, and the wave length is simply the distance from one crest to the next, in the wave which is associated with the propagation of light.

Q. And it measures the frequency?

A. The frequency is inverse to the proportion of wave length.

Q. You define it as the distance between the crests of two successive wave lengths; is that it?

A. Yes.

(Testimony of Dr. Philip A. Leighton.)

Q. And the classification of the therapeutic parts of the [423] electromagnetic spectrum are made by the designation of wave lengths; is that correct?

A. Wave lengths.

Q. And what is the standard unit of measuring such wave lengths?

A. The angstrom unit is commonly used.

Q. And what is that?

A. That is a ten-millionth part of a millimeter.

Q. It is the same as one-tenth of a millimicron?

A. The same as one-tenth of a millimicron.

Q. Now, what are the principal radiations in the electromagnetic spectrum?

A. Well, the whole electromagnetic spectrum begins at the long wave lengths, as with such radiations as are emitted from every alternating current lead wire in a building or a house. In other words, just the ordinary lighting current emits a very long wave of the electromagnetic spectrum. The next below are shorter waves in the range which is used for radio transmission. Next below is the range which is given off by what is known as Heat Radiation, given off by such things as a steam radiator or an electric iron. Then next below that is that which is known as infra-red, then visible light, then the ultra-violet light, then x-rays, and then gamma radiation, which is obtained from radium and radium active agents. [424]

Q. In that classification you have started with the highest and gone to the lowest?

(Testimony of Dr. Philip A. Leighton.)

A. From the longest to the shortest.

Q. From the longest to the shortest?

A. Yes.

Q. How would you classify ultra-violet rays, so far as their length is concerned?

A. They are a shorter wave length than visible light, longer than x-rays.

Q. What would be the range, the spectral range of ultra-violet light?

A. Ultra-violet from about 4000 down to 100 angstrom units.

Q. I notice you classify them downwards insteads of upwards. What is the reason for that?

A. I don't know. I suppose one starts from the visible rays of the spectrum as a starting point and goes from there further into the ultra-violet. One usually speaks of the near ultra-violet as representing that part of the ultra-violet nearest to the visible spectrum.

Q. It is customary in the literature to specify them upwards rather than downwards, is it not?

A. Not altogether, no.

Q. You say the visible rays are in the range immediately above the ultra-violet; is that correct?

A. Yes, approximately 4000 to 7500 angstrom units. There is [425] no definite sharp line of demarcation. Some individuals can see shorter wave lengths than others.

Q. What are the lengths of ultra-violet rays found in the rays of the sun, in the natural sunlight?

(Testimony of Dr. Philip A. Leighton.)

A. The ultra-violet rays of sunlight, the limit, the detectable limit will depend on the time of day and time of year, the atmospheric conditions, the latitude and various factors, but generally it runs from 3000 to 2900 angstroms.

Q. Would you say that the sun's rays would contain rays between 2800 and 3150 angstrom units?

A. Contains rays over a part of that region.

Q. That is, are there some of those rays that are between those different—

A. Limits?

Q. —limits? A. Are in the sun, yes.

Q. And most of them are, however, between 3000 and 2900 angstrom units; is that correct?

A. No, most of them are above 3000.

Q. How far above 3000?

A. Well, the intensity—if we start, let us say, at the shortest wave length we can detect in the sun on a particular day and at the particular time and it should be 2950 angstroms, as we go to the longer wave lengths the intensity of the sunlight would increase very rapidly up to a maximum of about [426] 5500 angstroms.

Q. What would be the shortest wave lengths found in the sun's rays?

A. Well, as I say, that depends on the time of day and the time of year, and, to some extent, on the atmospheric conditions and on the latitude, but it runs from 3000 to 2900 angstroms usually.

Q. There are very few of the sun's rays that are below 2900 angstroms; is that correct?

A. That is right.

(Testimony of Dr. Philip A. Leighton.)

Q. I believe you stated that the range of the ultra-violet rays was between 4000 and 100 angstrom units. Is that correct? A. That is right.

Q. Would that be true so far as the most frequently found ultra-violet rays are concerned?

A. Referring to what source?

Q. Either limit, 4000 or 100?

A. That is referring to what type of source?

Q. Artificial sources?

A. Artificial sources?

Q. Yes.

A. Most of the rays found in artificial sources lie between 2000 and 4000 angstroms.

Q. That is, there are very few that are as short as 100 angstrom units? [427]

A. It requires special techniques to get them.

Q. Would you say that the general range of ultra-violet rays would be not shorter than 1800 angstrom units? A. That is right.

Q. And ranging from there to about 4000?

A. That is right.

Q. And as I have described to you the wave lengths of respondent's product in this case, it is a fact that most of those wave lengths are shorter than the wave lengths found in the sun? Is that correct?

A. Well, the one prominent wave length in there is shorter, the——

Q. That is, the 2540—— A. Yes.

Q. ——angstrom unit wave length?

A. Yes.

(Testimony of Dr. Philip A. Leighton.)

Q. Now you have spoken several times in your testimony today about 2537. Will you state what the distinction or difference is between 2537 and 2540?

A. The wave length of this line, which is the intense line in the cold quartz mercury type of arc, is 2537.4, I believe, angstrom units.

Q. And that would be, for all practical purposes, the same as 2540?

A. When one says "2540", he is just expressing it approxi- [428] mately.

Q. Approximately. So far as your testimony is concerned, it would not make any difference one way or the other, because it is such a small amount?

A. That would not make any difference.

Q. I see. Now, you spoke this morning in your direct testimony of the difference between a sun lamp, properly so-called, and a therapeutic lamp. You recognize such a distinction, do you not?

A. Yes.

Q. What would be your definition of a sun lamp, properly so-called?

A. A sun lamp is one which is designed to reproduce, to some extent at least, the range of radiation that obtains in sun light.

Q. Would you say that a correct definition of a sun lamp would be one that emits ultra-violet radiation not differing essentially from that of the clearest weather, mid-day, mid-summer, mid-latitude, sea level, natural sunlight?

(Testimony of Dr. Philip A. Leighton.)

A. That sounds reasonable.

Q. And that would be as nearly a correct definition of a sun lamp as you could think of at the present time?

A. Yes, but I would say that very many of the sun lamps on the market do differ appreciably from that.

Q. That would be the ideal, would it? [429]

A. Yes.

Q. What would be the spectral range of wave lengths of a properly so-called sun lamp?

A. From about 3000 to 30,000 angstrom units, with a maximum of intensity at 5500 angstrom units.

Q. Where would most of the rays be found in that sun lamp?

A. They would be found at wave lengths longer than 5500 angstroms.

Q. I believe you stated a while ago that most of the sun's rays were in the range between 3000 and 2900 angstrom units. Is that correct?

A. No.

Q. What was your testimony about that?

A. My testimony about that was that the short wave length limit of the ultra-violet in sunlight lies between 3000 and 2900. The intensity of ultra-violet in that region of sunlight is extremely small.

Q. You mean by that that there were no rays shorter than that, but there were a large number that were longer than that; is that right?

A. That is correct.

Q. Would you say that any lamp producing an

(Testimony of Dr. Philip A. Leighton.)

appreciable amount of ultra-violet rays less than 2900 angstrom units would not properly be regarded as a sun lamp? A. That is correct. [430]

Q. That would be properly called a therapeutic lamp, would that be correct? A. Yes.

Q. And respondent's product then would be properly a therapeutic lamp rather than a sun lamp, in your judgment?

A. Should not be classed as a sun lamp.

Q. There has been considerable said in your testimony with reference to erythema. Just what do you mean by "erythema"?

A. That means a reddening of the skin.

Q. Is that synonymous with sunburn?

A. Yes.

Q. Is it a desirable condition of the skin or not?

A. In itself it is questionable as to whether it is desirable. Probably it is not, but the best evidence indicates that erythema production and the beneficial effects, such as increased vitamin D activity, bactericidal action, etc., more or less go along with erythema, and to get one, to get those effects, you must also produce erythema.

Q. Do you mean by that that unless you produce erythema it is not possible to have any of the other beneficial effects that you have mentioned?

A. No. One can obtain beneficial effects even with exposures so short that no erythema is produced, but, of course, the extent to which the beneficial effects are produced are lowered also, if one does that. [431]

(Testimony of Dr. Philip A. Leighton.)

Q. Is there any difference between the action of the sun's rays, so far as the production of erythema is concerned, and the action of a cold quartz lamp such as respondent's product?

A. No, I have been able to observe no difference. Erythema seems to be much the same with either.

Q. And the same thing would be true so far as a sun lamp is concerned? A. Yes.

Q. Would the action of a sun lamp be comparable to the action of natural sunlight, so far as erythema is concerned?

A. If the sun lamp fulfills the ideal conditions which we specified, yes.

Q. So that with the ideal of a sun lamp,—

A. Right.

Q. —you get as near the conditions of natural sun as possible? A. Yes.

Q. Would the same thing be true so far as a therapeutic lamp is concerned?

A. You mean with respect to what?

Q. So far as approximating the rays of the sun, natural sunlight?

A. No. I don't think that should be the ideal for a therapeutic type of lamp.

Q. And why not? [432]

A. I think with the therapeutic lamp, the ideal should be that which produces the desired beneficial results with maximum efficiency.

Q. And a sun lamp would take longer to pro-

(Testimony of Dr. Philip A. Leighton.)

duce the same effects than a therapeutic lamp; is that correct?

A. There again one must—before one answers one must specify the intensity of the therapeutic lamp and the distance that it is held from the body.

Q. Now, assuming for the fact of your testimony that the therapeutic lamp is a cold quartz lamp, used in the hand, continually moving over the surface of the skin, at a distance of not more than one inch for a period of not less than one minute and not longer than six minutes, what would be your answer in regard to that?

A. I would say you would get a greater beneficial effect produced than from an exposure of the same length of time by sunlight.

Q. Would the same thing be true, so far as the hand lamp is concerned, of the same cold quartz type, where the lamp is held at a position of 20 to 24 inches from the skin?

A. That would require some experimental work for a specific answer. I should say it should be of the same order of magnitude of time for the cold quartz and sunlight at that distance.

Q. Now, what are the beneficial effects of the ultra-violet [433] rays of the sun, if any?

A. The only beneficial effect that is definitely established is the increase of vitamin D activity.

Q. You are speaking now of the natural sunlight?

A. Yes.

Q. Would the same thing be true of the rays,

(Testimony of Dr. Philip A. Leighton.)

of the ultra-violet rays of the sun lamps, properly so-called?

A. Yes. I should add too bactericidal action. I think that is a beneficial effect.

Mr. Tolin: Might I ask to which answer the witness addresses that addition?

The Witness: Bactericidal action?

Mr. Tolin: Yes.

The Witness: To both.

Trial Examiner Reardon: Read the last question now and let the witness answer the last question.

(The question referred to was read.)

The Witness: Yes.

By Mr. Lyon:

Q. That is, would the only effect be the increase of vitamin D activity, that you refer to?

A. Yes. I should, I think, add bactericidal action to both the beneficial effects of both sunlight and the therapeutic type of lamp.

Q. I am speaking now only of the sun's rays, the natural [434] sunlight, and the ultra-violet rays of a sun lamp, disregarding for the present time the therapeutic lamp. A. Oh, I did not——

Q. What would be the effect of those?

A. Well, I should say for both the sunlight and the ideal type of sun lamp, two beneficial effects that have been definitely established would be increased vitamin D activity and bactericidal action.

(Testimony of Dr. Philip A. Leighton.)

Q. Those have been definitely established,——

A. Those have been definitely established.

Q. ——is that correct? A. Yes.

Q. We are speaking now of the sun lamp and the sun rays, as distinguished from therapeutic lamps; is that correct? A. Yes.

Q. Now, what would be the bactericidal effect of the sun and of the ultra-violet rays of a sun lamp, properly so-called?

A. It is a killing of bacteria.

Q. And what kind of bacteria?

A. Almost all kinds.

Q. How deeply would those rays penetrate, so far as bacteria are concerned?

A. They would penetrate into the corium.

Q. That is the outer layer of the skin?

A. No, that is the fourth layer down. That is the last [435] layer of the epidermis proper.

Q. Would there be any difference, so far as the bactericidal effect is concerned, so far as therapeutic lamps are concerned as compared to the rays of the sun and the rays of sun lamps?

A. The therapeutic lamp, if by that we mean one which has a radiation of shorter wave lengths than that found in a sun lamp, would be efficient, more efficient in bactericidal action.

Q. Just what do you mean by that, "more efficient"?

A. That for a given exposure, a smaller exposure would be required to kill bacteria.

Q. With a therapeutic lamp? A. Yes.

(Testimony of Dr. Philip A. Leighton.)

Q. You mean by that all therapeutic lamps, or just a certain type of therapeutic lamp?

A. I think that should be limited to certain types of therapeutic lamps.

Q. What types would those be?

A. Both the cold and hot mercury arcs in quartz would be of that type.

Q. Which is the more efficient of those two types? A. The cold.

Q. How far would that efficiency go, in your opinion, so far as bacteria are concerned? [436]

A. I don't know just what you mean.

Q. That is, the effect of a cold quartz lamp.

A. Oh, you mean in the skin?

Q. Yes.

A. That also penetrates to the corium. I think the penetration of 2537 into the corium is about 7/10ths as great as the penetration of 3000 angstroms into the corium.

Q. Now, what does this 3000 angstrom units denote, so far as a measuring stick is concerned? Just what is the significance of that figure?

A. 3000 angstroms mean 3000/10,000,000th of a millimeter.

Q. Yes, I know, but I mean so far as the exact number of angstrom units is concerned. Is that the natural sunlight, that you referred to there?

A. 3000?

Q. Yes.

A. That is very close to the limit of ultra-violet in natural sunlight; between 3000 and 2900 you can

(Testimony of Dr. Philip A. Leighton.)

say is the limit, the ordinary limit of ultra-violet in natural sunlight.

Q. And you say at 2537 angstrom units, found in the cold quartz type of therapeutic lamps, that would be 7/10ths as effective as the natural sunlight; is that correct?

A. No, I would say that about 7/10ths—the penetration of the 2537 angstroms line of cold quartz lamp into the corium, the inner layer of the skin, would be about 7/10ths [437] as great as the penetration of ultra-violet of 3000 angstroms into the corium.

Q. You mean by that the cold quartz rays would not penetrate as deeply as the sun's rays; is that correct?

A. No. I mean if we should expose the surface of the skin to two beams of light, one of 2537 angstroms and one of 3000 angstroms, that the amount of the 2537 which penetrated through to the corium would be about 7/10ths as much as the amount of 3000 which would penetrate through to the corium.

Q. That is, there would not be as much penetration?

A. There would not be as much, but there would be 7/10ths as much.

Q. But what would penetrate would be as much, —that is, there would be a less amount of penetration, but what would penetrate would penetrate as deeply; is that correct?

A. Would penetrate as deeply.

Q. I believe you said the minimum amount of

(Testimony of Dr. Philip A. Leighton.)

bactericidal action would start at about 2400 angstrom units; is that correct?

A. As I recall, I said this morning simply starting from that point and going to longer wave lengths, we traced the approximate change in bactericidal action with wave lengths.

Q. Didn't you state that 2400 would be the minimum?

A. I believe there is—yes, there is a minimum around 2400 or 2500 angstrom units in the bactericidal action. [438]

Q. And that is going up to a maximum at about 2700 angstrom units? A. About 2700.

Q. And then it decreases from there, does it?

A. Decreases from there.

Q. Up to what point?

A. That reaches zero at between 3000 and 3100 angstroms.

Q. And the 2540 angstrom units would be within the minimum zone, would it, rather than the maximum then?

A. 2540 is on the ascending part of the maximum zone. It is between the minimum and the maximum.

Q. It is not either minimum nor maximum?

A. No.

Q. Is that correct? A. Yes.

Q. Then it would be approximately as the sun's rays?

A. It would be higher than the sun.

(Testimony of Dr. Philip A. Leighton.)

Q. That is, when it goes up to as high as the sun's rays, it goes down?

A. The efficiency is lower.

Q. So far as bactericidal action is concerned,—

A. Yes.

Q. —above 2700 angstrom units; is that correct? Above 2700 angstrom units, it has a descending penetration?

A. A descending effectiveness. [439]

Q. Effectiveness? A. Yes.

Q. You also spoke about getting a coat of tan from a sun lamp and not from a therapeutic lamp?

A. Yes.

Q. What is the reason for that?

A. The wave lengths above 3000 angstroms, from there on up several hundred angstroms, as least, will produce pigmentation, whereas they do not produce these other effects we have mentioned, and the wave lengths above 3000 wave lengths, as we go up, become much more intense in sunlight.

Q. Would the coat of tan be a beneficial effect or not?

A. As far as I can determine, opinion is divided on that.

Q. But, in your opinion, the cold quartz type would not given any appreciable tanning of the skin?

A. The cold quartz type does not give pigmentation—does not give as great a pigmentation as the wave lengths above 3000 angstroms.

(Testimony of Dr. Philip A. Leighton.)

Q. Pigmentation would have nothing to do so far as the bactericidal action or erythema producing effects are concerned? A. No.

Q. That would simply have to do with the appearance of the body, would it not? A. Yes.

[440]

Q. And those effects are not very beneficial, in your opinion? A. No.

Q. Other than the appearance of the body, if you want a tanned appearance?

A. That is right. The chief physiological effect seems to be that the pigment stops the penetration of infra-red rays, the heat rays of the sun into the body, and thereby prevents the heating of the subcutaneous tissues by intense sunlight.

Q. Then, in your opinion, so far as the bactericidal effects are concerned, there is no appreciable difference between natural sunlight and the ultra-violet rays of a sun lamp, and the ultra-violet rays of a cold quartz lamp, such as respondent's product; is that correct?

A. No specific difference.

Q. That is, one is not any more effective than the other?

A. The cold quartz lamp would be much more efficient in the bactericidal effect.

Q. And for what reason?

A. Because the efficiency of that wave length is greater than the longer wave lengths over a shorter exposure, and gives the same results.

(Testimony of Dr. Philip A. Leighton.)

Q. Have you had any personal experience along that line?

A. Yes, I have made some personal experiments on that. [441]

Q. Just what have you done along that particular line?

A. Well, my wife had a skin infection two years ago, and we first tried exposure to a hot quartz lamp, which I had set up in the laboratory. I think she tried sun light too, and it didn't do anything. I brought home a cold quartz lamp and gave her several treatments, and it helped appreciably.

Q. And what was the skin infection?

A. I don't remember the name of it.

Q. Did you have it treated by a physician at that time? A. Yes, we did.

Q. Did he give any particular diagnosis of it?

A. It was a—yes, he did, but I am afraid it has slipped my mind.

Q. He was treating it also, in addition to the treatments at home?

A. No. We were following his prescription in giving her these treatments.

Q. And she was under the supervision and direction of a doctor all of that time?

A. Yes. We sort of collaborated on it.

Q. That is the only experience that you have had with the bactericidal action?

A. That is the only direct experience with bactericidal action.

Q. Just that one particular instance? [442]

(Testimony of Dr. Philip A. Leighton.)

A. Yes.

Q. You have never experimented in the laboratory?
A. Not with bacteria.

Q. Would you have any knowledge as to what bacteria it was that caused your wife's condition at that time?

A. I did know, but I am sorry I have forgotten.

Q. Would you know whether it was bacteria found on the surface of the skin or below the surface of the skin?

A. They were in the corium layer of the skin.

Q. How would you know that?

A. That was quite definite from the appearance of the thing. The corneum layer peeled off, and this infection spread underneath it.

Q. You are not a medical doctor, are you?

A. I am not a medical man.

Q. Have you had any medical training or experience at all?
A. No, I have not.

Q. What education or experience did you have relative to the different layers of the skin and all that sort of thing?

A. That is from my own reading and discussion with scientific colleagues.

Q. It has been more or less apart from your regular duties as a teacher of chemistry?

A. No. That is our work, the chemical effects in the skin, and as a photochemist, that is a part of my interest. [443]

(Testimony of Dr. Philip A. Leighton.)

Q. Now, you spoke about four layers of the skin; is that correct? A. Yes.

Q. There are four layers? A. Yes.

Q. And that is generally recognized?

A. Yes. Oftentimes the two center layers, the granulosum and the germinativum, are classed together as one main layer, the malpighia or malpighian layer.

Q. I believe you stated that in your testimony you had not differentiated or included all of those layers together, so far as the action of the ultra-violet rays was concerned. That is, your testimony dealt only with each specific layer; is that right?

A. That is right.

Q. Now, would your testimony be any different considering all of the layers together, as found in the skin, and considering the action of the ultra-violet rays of the cold quartz lamp on the skin as composed of those four layers?

A. No. I would say that as far as the penetration was concerned, there are no marked differences to be ascribed to any of the wave lengths in the region, 2500 to 3050 angstroms.

Q. That is, is it your testimony that the penetration of the skin as a whole would have the same penetration of each layer of the skin, as you described? [444]

A. No, I would say if we started with the surface of the skin and allowed radiations of various wave lengths in this region, but of the same intensity, to fall upon it, and then would measure the

(Testimony of Dr. Philip A. Leighton.)

percentages of those different wave lengths which reach through the corneum into the granulosum, through the granulosum into the germinativum, and into the corium, and so forth, we would find no great differences between any different wave lengths in that region.

Q. I believe you gave 2500 angstrom units as the minimum of penetration; is that correct?

A. No.

Q. Through all those different layers?

A. No. I said in the range between 2500 and 3050 we didn't find any marked differences in penetration.

Q. Taking your testimony with reference to the penetration of the corneum, didn't you state that the absorption above 3100 angstrom units increased to a maximum at 3500 angstrom units?

A. Corneum?

Q. Yes. A. No.

Q. And that it decreased to 2500 angstrom units as a minimum?

A. I said above 2400 angstroms, starting at 2400 the absorption of the corneum decreases to a minimum around 2500. [445]

Q. Yes, that is what I understood you to say.

A. Yes. Then it increases to a maximum around 2700 or 2800, and then decreases again in wave lengths above that.

Q. Then the range of 2540 angstrom units as found in cold quartz would be near the minimum, would it not?

(Testimony of Dr. Philip A. Leighton.)

A. Near the minimum of absorption of the corneum.

Q. And the same thing would be true so far as the granulosum is concerned, would it not?

A. Yes. That means that 2537 penetrates the corneum and granulosum more efficiently than 2800 angstroms does.

Q. The same thing would be true so far as the deeper layers are concerned?

A. No. The other deeper layers did not show a minimum of 2500 followed by a maximum of 2700 or 2800.

Q. What do the deeper layers show, so far as the minimum is concerned? What would be the minimum for those?

A. They don't show any minimum. They show very high absorption at wave lengths below 2400 angstroms. The absorption of the germinativum drops off fairly rapidly in the longer wave lengths. The absorption of the corium drops off quite rapidly from 2400 to 2500. Then it becomes just about constant for several hundred angstroms, and then starts to drop off again.

Q. That is, the absorption in those underlying layers of the skin is less at 2537 angstroms than the lower—— [446]

A. The absorption of those underlying layers is greater in the germinativum than at longer wave lengths, and is about the same at 2537 as at other wave lengths up several hundred angstroms toward

(Testimony of Dr. Philip A. Leighton.)

higher wave lengths, and then the absorption drops off.

Q. And your testimony would be the same so far as those different layers are concerned; is that correct? So far as the absorption is concerned, is that correct?

A. My testimony would be the same in what regard, do you mean?

Q. In comparison with the absorption of the ultra-violet rays around 3000 angstrom units?

A. The ultra-violet rays around 3000 angstroms as compared with 2537?

Q. Yes, that is correct.

A. Yes, the relative absorption of those four layers is just about the same at those two wave lengths.

Q. Yes, putting it along some generalization, if we can. We don't want to be too specific.

A. Yes.

Q. And you said the absorption was slightly greater at 2537 angstrom units than at 3000; is that correct? A. Yes.

Q. And translating that to the terms of the product involved in this case, would you say that the penetration of a cold [447] quartz lamp would be slightly more effective than the natural rays of the sun?

A. The other way around. The natural rays of the sun would be slightly more penetrating than the cold quartz lamp.

(Testimony of Dr. Philip A. Leighton.)

Q. Would the same thing be true so far as sun lamps are concerned?

A. The ideal type of sun lamp, yes.

Q. What difference would that make as to the bactericidal value?

A. Well, the bactericidal value for bacteria in the corium layer, let us say, would depend, first, on those relative transmissions into the corium layer, in which the ultra-violet rays of the sun would be transmitted somewhat more than those in the cold quartz light, plus the relative efficiency of those two wave lengths in producing bactericidal action. There the efficiency of the cold quartz lamp is much higher. The net result would be that the bactericidal action of the cold quartz lamp for bacteria in the corium should be greater than that of sunlight for bacteria located in the corium.

Q. Translating that to terms of common speech, would that mean that the rays possibly would not be as strong, but as used in this particular lamp they would be more efficient?

A. Principally, they would not be as strong, but they would be more efficient, so it would take less of them.

Q. And that would be due to the method used in this particular [448] lamp; is that correct? That is, I mean by being held so close to the skin?

A. No, that wouldn't have anything to do with it.

Q. What would be the reason for the greater efficiency?

(Testimony of Dr. Philip A. Leighton.)

A. The wave length is the determinative factor.

Q. You mean that the shorter wave length would be more efficient than the longer wave length?

A. Comparing those two, yes.

Q. Comparing those two? A. Yes.

Q. It would make no difference as to whether you were comparing the natural sun or any artificial source?

A. If it is an ideal type of sun lamp, or if it were some other artificial sources, then the answer would be different.

Q. I see. But so far as the cold quartz lamp is concerned, you would regard that as an efficient source, would you?

A. That is the most efficient source that has yet been developed.

Q. You mean, of any artificial source?

A. Yes.

Q. Do you mean by that as compared to hot quartz, for example? A. Yes.

Q. And carbon arc lamps? A. Yes.

Q. In your opinion, it is more efficient than any of those,— [449] A. Yes.

Q. —so far as bactericidal action is concerned? A. That is right.

Q. I believe you stated that the rays of the sun would have no appreciable bactericidal effect; is that correct? I believe you limited it only to the activation of vitamin D?

A. I tried to introduce that other statement afterwards, you will remember.

(Testimony of Dr. Philip A. Leighton.)

Q. What was that?

A. That I felt I should add to that also that it had a bactericidal action.

Q. But it was slight?

A. But it is slight compared to that of the cold quartz.

Q. And the cold quartz lamp also is rather slight, is it not, so far as bactericidal action is concerned?

A. No, I don't think I would say it is.

Q. Well, in your testimony all the way through you have used the words "slightly greater." I would like to find out, if possible, just what difference there would be and what you mean by the words "slightly greater".

A. "Slightly greater," all right. For example, I say the penetration of 3000 angstroms into the corium is slightly greater than the penetration of 2537 into the corium. The actual figures, average figures, I believe, of radiation instituted in the layers of the skin, are about 16 per cent of [450] the radiation of 3000 angstroms reaches the corium, and about 11 per cent of the radiation of 2537 reaches the corium, a ratio of about 7/10ths to 1, which I used before.

Q. That was produced how?

A. Those were obtained by actual measurements.

Q. By actual measurements? A. Yes.

Q. And by the use of artificial sources of ultra-violet energy? A. Yes.

Q. Of cold quartz lamps?

(Testimony of Dr. Philip A. Leighton.)

A. No. I think that a hot quartz lamp was used in those determinations.

Q. You have never used any hot quartz lamps in your experiments, have you?

A. Oh, yes. I designed several of my own.

Q. Now, you have spoken about ergosterol in your testimony. Just what was that again, Doctor?

A. I said quite a bit about ergosterol.

Q. Yes. Just what is ergosterol?

A. Oh, just what is it?

Q. Yes.

A. It is a member of the chemical family of sterols.

Q. What is a sterol?

A. A sterol is an organism, family of organic compounds [451] which has a complex ring structure. It is a compound of carbon, hydrogen and oxygen, and the detailed structure of it is not yet definitely known.

Q. What is its relationship to vitamin D?

A. By exposure of the sterols to ultra-violet radiation, increased vitamin D activity is produced in the body. Presumably vitamin D itself is not any definite chemical compound, but vitamin D activity is due to the production of some particular chemical configuration of atoms and molecules, and by exposure of these different sterols to ultra-violet radiation, that configuration is produced. But by exposure of ergosterol, the actual chemical molecule at which that configuration is produced may be dif-

(Testimony of Dr. Philip A. Leighton.)

ferent from the one that would be produced by exposure of cholesterol.

Q. You spoke about ergosterol being found only in the corium layer. That is the lowest layer; is that correct?

A. Chiefly in the corium layer.

Q. And you spoke of it as being absorbed. What is the chemical effect of the absorption?

A. I spoke of it as absorbing light.

Q. Absorbing light? A. Yes.

Q. And that set up a chemical reaction?

A. Yes.

Q. What would that produce? [452]

A. The particular product in the absorption of ergosterol is called calciferol.

Q. And what relationship would that have to vitamin D?

A. Calciferol contains this special configuration of atoms and molecules which give rise to the antirachitic activity.

Q. You said that was an action which was relatively minor at 2400 angstrom units; is that correct?

A. No. In so far as the relative efficiency of different wave lengths below 3000 angstroms in producing vitamin D activity, it has not been definitely established. It is known that all wave lengths between 3100 and, at least, down to 2400 produce vitamin D activity, but the relative efficiencies have not yet been definitely established.

Q. Well, I made some notes of your testimony on that point, and I wish you would correct me if

(Testimony of Dr. Philip A. Leighton.)

my memory is wrong on that. I noted that you stated that the absorption is relatively small at 2400 angstrom units and increased towards wave lengths with a maximum at 2700 to 2800 angstrom units, decreasing to small at 3100 angstrom units.

A. That is the absorption of ergosterol itself to light. The maximum at 2700 to 2800, and another maximum between 2900 and 3000, a smaller maximum.

Q. That was the factor which produces the vitamin D; is that correct?

A. That is one of the sterols, just taking that as an [453] example of the sterols. Cholesterol is another sterol which occurs in the skin.

Q. Now, this range of 2540 angstrom units would be close to the minimum, would it not, according to that statement?

A. It is known that vitamin D activity is produced at least to 2400 angstroms, and you don't know how much further, but presumably the production would increase to the limit of the absorption curve of ergosterol.

Q. And the absorption curve limits would be 2400 and 3100?

A. It extends at least to 2400. I don't think the lower limitation has been determined, but it is decreasing as one goes down to shorter wave lengths.

Q. There would be a total of about 700 angstrom units in that range, would there not, as between 2400 and 3100 angstrom units?

A. Yes, about 700 angstrom units.

(Testimony of Dr. Philip A. Leighton.)

Q. Then the 2540 angstrom units would be at the lower end of that range, would it? A. Yes.

Q. And it would be smaller than the maximum?

A. Smaller than the maximum.

Q. I believe you stated it would be approximately the same as the absorption for 3000 angstrom units? A. That is right.

Q. Now, translating that into popular speech, what would be [454] the effect in the production of vitamin D by the use of a cold quartz lamp, such as respondent's product, as compared to natural sunlight or a sun lamp, properly so-called?

A. That means of the light which reaches the ergosterol bearing layers in the skin that the same amount will be absorbed at 2537 angstroms as is absorbed at 3000 angstroms.

Q. What would be that relationship to the production of vitamin D?

A. Once again, it has not been definitely established as to whether the production of vitamin D—as to how the efficiency of vitamin D varies with the wave length.

Q. Then you would not be able to give us an opinion with reference to the efficiency of respondent's product here, so far as the production of vitamin D is concerned? Is that correct?

A. I could say that it has been definitely established that that wave length does produce vitamin D, and it would be my opinion that the efficiency of the vitamin D production for that wave length would be about the same as that of 3000 angstroms.

(Testimony of Dr. Philip A. Leighton.)

Q. That is, it would be no more efficient than natural sunlight or a sun lamp, properly so-called?

A. No. It would be of the same order.

Q. Something was said about vesiculation, Doctor. That simply means production of blisters, does it not? [455]

A. No. Vesiculation is ascribed to the rupture of a cell wall and exudation of the protoplasm through the rupture out of the cell.

Q. You spoke of its producing blisters?

A. Yes.

Q. What did you mean by that?

A. Blisters are the result of vesiculation.

Q. The vesiculation itself, technically means the coagulation of the protoplasm in the cells; is that correct?

A. Yes, vesiculation is the result of coagulation of the protoplasm of the cell.

Q. It is the result? A. The result, yes.

Q. What is the blister? Is that a result, or a symptom, or what?

A. It is a result of vesiculation; a symptom of it too, yes.

Q. Is that the only result that is ordinarily visible?

A. I think that is the only result I have ever seen.

Q. Does that have any connection with the bactericidal effect of ultra-violet rays? [456]

A. Not directly.

(Testimony of Dr. Philip A. Leighton.)

Q. Vesiculation, as I understand it, has nothing to do with germs, or bacteria, or anything like that?

A. No.

Q. It is not ordinarily used in connection with the human body or the skin, or any parts of the human body?

A. You mean the term?

Q. Yes.

A. Yes. That can be used with regard to cells in the human body, as well as individual cells.

Q. In what connection? In what way? How would you speak of it?

A. Rupture of the cell wall and the ejection of the protoplasm from the cell.

Q. I believe that, summing up your testimony along this line, you stated that such a product as respondent's product, with a radiation lying mostly in the range of 2540 angstrom units, would produce no vesiculation in the human body. Is that correct?

A. I don't think I said that.

Q. Well, what did you testify on that?

A. I would say that the light of 2537 angstroms would produce vesiculation, but with a lower efficiency than light at 2600 or 2700 or 2800 angstroms, but with a higher efficiency than a light of 3020 angstroms. [457]

Q. What would that mean in terms of the skin, or as relating to the skin?

A. To answer that, one would have to combine these figures for vesiculation efficiency with the transmissions of the various layers of the skin, and

(Testimony of Dr. Philip A. Leighton.)

the resultant effect would be due to the interrelation of those two things.

Q. What would that interrelation amount to?

A. Well, then let us compare again 2537 with 3020 angstroms. The transmission at 3020 angstroms into the corium exceeds that of 2537 by about the ratio of 1 to 0.7, but the efficiency of 2537 in producing vesiculation exceeds that of 3020. I don't recall the exact figures for those relative efficiencies. The net result would be obtained by combining those two.

Q. What would that result be on the skin?

A. Without being able to recall the figures for 2537 and 3020 on vesiculation, I don't know what the relative efficiency of those two wave lengths in producing vesiculation in the corium would be.

Q. What is the significance of the 3020 angstrom units?

A. That is taken because that is the most intense line in this effective region of the ultra-violet in the mercury type of sunlight, mercury vapor type of sunlight.

Q. That would be a sun lamp, properly so-called?

A. That is a sun lamp wave length, yes.

Q. How does that compare with natural sunlight? [458]

A. Well, that is in the region which is found in natural sunlight.

Q. What would be the distinction between a mercury type of sun lamp, which you just referred to,

(Testimony of Dr. Philip A. Leighton.)

and the mercury arc, mercury quartz arc, such as respondent's product?

A. The relation between them?

Q. Yes. What would be the difference between them?

A. One gives wave lengths which are limited to the region above 2900 angstroms. The other gives radiation which is chiefly at 2537 angstroms.

Q. The difference is chiefly in the wave lengths?

A. The difference is chiefly in the wave lengths. I believe the average commercial sun lamp has a considerably lower intensity of ultra-violet radiation than does the cold quartz lamp.

Q. That is, it takes longer to produce the same effect? Is that what you mean? A. Yes.

Q. Now, do you mean by that that the shorter wave lengths found in the cold quartz lamp are harsher in their effects? A. No.

Q. What do you mean? Are they——

A. Harsher?

Q. Yes.

A. I don't know what is meant by that. [459]

Q. Is there such a term used?

A. I have never observed any such thing as that.

Q. What is the distinction in the effect of the shorter, as compared to the longer rays?

A. No specific difference. They both produce vitamin D activity, both produce erythema and both produce bactericidal action.

Q. One will take longer to produce the same effect; is that correct?

(Testimony of Dr. Philip A. Leighton.)

A. If you had them at the same intensities, the efficiency for bactericidal action would be greater for the short wave length. The efficiency for erythema production would be approximately the same. The efficiency for vitamin D activity, although that has not been established, the best we can say at present is that it is approximately the same at those two wave lengths.

Q. Those would be typical of sun lamps for the one, and cold quartz lamps for the other; is that correct? A. The ideal type of sun lamps.

Q. The ideal type of sun lamps? A. Yes.

Q. In your opinion, would the cold quartz rays be more intense than the ideal type of sun lamp's rays?

A. No. I think the cold quartz ultra-violet is more intense than the average present commercial type of sun lamp. [460]

Trial Examiner Reardon: Doctor, I think you said a while ago that you measured the penetration, as I understand it, of the ultra-violet to certain layers of the skin by means of the hot quartz lamp. Is that correct?

The Witness: Yes.

Trial Examiner Reardon: Was the hot quartz lamp chosen for the purpose of measuring casually or by design, rather than the cold quartz?

The Witness: It was chosen because, as a laboratory instrument, it serves as a source for a number of different wave lengths, and if one wants to make

(Testimony of Dr. Philip A. Leighton.)

comparison for different wave lengths, it is a more convenient one to use.

Trial Examiner Reardon: You do measure the penetration of the ultra-violet ray by the cold quartz?

The Witness: By the cold quartz, and it would be the same exactly as with the hot quartz.

Trial Examiner Reardon: I see. When you specified the hot quartz, I wondered if it was by design or meant anything.

The Witness: It is just because it is a more convenient source for laboratory use.

By Mr. Lyon:

Q. To obtain the same results then by the use of the cold quartz lamp, you would not have to expose the skin as long as you would with the natural sunlight or with the sun lamp; [461] is that correct?

A. With the average commercial sun lamp, that is right.

Q. And also less than the natural sun?

A. Yes.

Q. In view of that, wouldn't you say that the rays of the cold quartz lamp were more intense than those of a sun lamp or the natural sun?

A. I think the intensity is greater than that of the average commercial sun lamp or the natural sun. [462]

Q. Now, what was your testimony as to the stimulation of the [463] metabolism of the body by the use of a cold quartz lamp?

A. Through increased vitamin D activity, that

(Testimony of Dr. Philip A. Leighton.)

stimulates the calcium phosphorus metabolism in the body.

Q. I believe you stated just a few minutes ago that, in your opinion, was no greater than by the use of a sun lamp? A. That is right.

Q. And it would be no greater than the natural rays of the sun? A. That is right.

Q. In your opinion, there is no particular advantage in the use of a cold quartz type of therapeutic lamp, so far as the activation of vitamin D is concerned? A. No.

Q. Coming down to the beneficial effects of the cold quartz type of lamp, what would you state, in your opinion, are such beneficial effects or results?

A. Only two have been definitely established. That is increased vitamin D activity and bactericidal action.

Q. You say that the increased vitamin D activity would be no greater than any other type of lamp; is that correct? A. I didn't say that.

Q. You said as far as sun lamps or natural sunlight?

A. The ideal type of sun lamp or natural sunlight.

Q. But there might be other types of therapeutic lamps which might be more effective in that respect? [464] A. More or less.

Q. Yes. So far as the bactericidal effect was concerned, I believe you stated there was a slight advantage in such a lamp over the sun lamp. Is that correct? A. That is correct.

(Testimony of Dr. Philip A. Leighton.)

Q. In your opinion, is there any advantage in the use of such a lamp as respondent's product over an ordinary sun lamp or the natural rays of the sun?

A. In a case where bactericidal action is desired, yes.

Q. You believe there is a slight——

A. Advantage.

Q. ——a slightly better bactericidal action?

A. Yes.

Q. Not very much greater though? Is that correct?

A. Yes, I would say it was greater, but not markedly greater.

Mr. Lyon: That is all I have. No further questions. [465]

CERTIFICATE

This is to certify that the attached proceedings before the Federal Trade Commission in the matter of: Docket No.—4407, Case Title—Ultra-Violet products, Inc., a corporation. Place—Los Angeles, California. Date—May 31, 1941, were had as therein appears, and that this is the original transcript thereof for the files of the Commission.

ETHEL E. FISHER & ASSOCI-
ATES, INC.

Official Reporters

By D. MacMILLAN

Assistant Secretary

DR. FLOYD ROSWELL PARKS

was thereupon called as a witness for the respondent and, having been first duly sworn, testified as follows:

Direct Examination

By Mr. Tolin:

Q. Will you state your name, please?

A. Floyd Roswell Parks. [469]

Q. What is your vocation?

A. Physician and surgeon.

Q. Where did you take your training, that is, your training in medicine and surgery?

A. Harvard University.

Q. When did you graduate from Harvard?

A. June, 1925.

Q. How long have you practiced medicine in the State of California? A. Since 1929.

Q. Have you, during that time, engaged in the general practice of medicine and surgery?

A. Yes.

Q. Are you on the staff or staffs of any of the hospitals here? A. Yes, sir.

Q. With what hospital or hospitals are you connected?

A. I have been associated with the General Hospital, the Children's, the California, the St. Vincent's, the Queen of Angels, the Hollywood. I guess that is about all of them.

Q. To what medical organizations do you belong?

A. The Los Angeles County, the State, the American Medical Association; a fellow of the American

(Testimony of Dr. Floyd Roswell Parks.)

College of Surgeons, and a member of the Los Angeles Surgical Society.

Q. What degree did you take at Harvard? [470]

A. Doctor of Medicine.

Q. Have you used ultra-violet light in your practice? A. Yes, sir.

Q. Are you familiar with the type of ultra-violet light that emanates from a cold quartz lamp giving off approximately 2537 angstrom units?

A. Yes, sir.

Q. Have you observed the results of that light upon the human body? A. I have.

Q. Have you given some study to the use of ultra-violet light— A. Yes.

Q. —in the treatment of disease?

A. Yes.

Q. And in its effect upon the health of the human body? A. Yes, sir.

Q. Are you familiar with the type of cold quartz lamp that is manufactured by the respondent here, the Ultra-Violet Products, Inc.? A. I am.

Q. Do you know their model known as the Life Lite? A. Yes, sir.

Q. I refer to a small hand lamp. Have you seen that one? A. Yes, I have. [471]

Q. I show you Commission's Exhibit 9, which is a circular upon which there is depicted various types of respondent's lights. You may look at both sides and indicate which of the types of respondent's lights you have seen.

A. I have seen this one here (indicating).

(Testimony of Dr. Floyd Roswell Parks.)

Q. The witness refers to——

A. Model AC.

Q. Model AC, or rather, Model H7?

A. Yes.

Q. On the other side of the page, Doctor, there appear to be different models. Have you seen any of those?

A. No, I haven't. I have used this other one. This (indicating) is the one I usually recommend.

Q. You say you usually recommend. What do you mean by that term, Doctor?

A. Well, if a patient comes in to ask me about a quartz lamp, an ultra-violet lamp, why, I tell them immediately that there are many kinds on the market, a good many of which are absolutely worthless, but this particular lamp I have found to be very beneficial, and that is the one that I do recommend.

Q. Are you interested in the Ultra-Violet Products, Inc.?

A. Only just very indifferently.

Q. I mean by that, do you hold any stock or have any contracts with it, or anything of that sort?

[472]

A. No, I don't.

Q. When did you first become acquainted with Mr. Thomas Warren, the president of that company?

A. Well, I had heard of him. I think I had met him just a short time ago.

Q. For what purpose did you recommend that

(Testimony of Dr. Floyd Roswell Parks.)

particular model of the respondent's lamp that you have identified on Exhibit 9?

A. Well, the patient that I have in mind is also a graduate of Harvard College and Law School, who had two youngsters, both of which tended to be not in too good health, and it was rather difficult for the mother to bring them into the office for the treatment, so I advised the use of this particular lamp which I pointed out. I thought it would save the mother a lot of unnecessary running to the office, and would do a lot of good, so I recommended it.

Q. For what condition?

A. Well, the little girl was run down. She was rather nauseated if she took cod liver oil and vitamin D by mouth. She had a stomach disorder which rather tended to be chronic. I thought that the cold quartz would help to give her the necessary vitamin D and, therefore, I was very happy to recommend it.

Q. Did you observe any improvement in the child afterwards?

A. You would hardly recognize the youngster now. The [473] stomach trouble has been lost and the youngster is very ruddy and healthy.

Q. Do you know whether the parents actually used the lamp at home for the treatment of the child? A. Yes, they did. [474]

Q. What is the difference between a sun lamp and a therapeutic lamp?

A. A sun lamp is one which gives out the vari-

(Testimony of Dr. Floyd Roswell Parks.)

ous wave lengths found in ordinary sunlight, which wouldn't contain purely ultra-violet, whereas an ultra-violet lamp is more apt to approximate the 100 per cent mark of purely ultra-violet rays, rather than the infra-red and the other rays in sunlight.

Does that answer it?

Q. Yes. Is there a difference in the angstrom units of [483] the ultra-violet light found in sunlight, and that which emanates from a lamp such as respondent manufactures? A. Yes.

Q. Which is it that has the longer rays?

A. The more efficient ultra-violet lamps have the greater angstrom units. Therefore, they are much more efficient.

Q. Do you mean by that they have the short rays, the rays that are below those that come from natural sunlight? A. Above those.

Q. How are those rays designated?

A. Well, they are designated usually above a certain figure or below a certain figure. It is more of a capacity in numbers of angstrom units in an ultra-violet light. A therapeutic lamp will be much greater than a sun lamp, which has relatively few in comparison.

That is more of a physical problem, one in physics than it is of medicine. We just know that because they tell us that. I have never figured the actual length of one of those angstrom unit lights.

Q. Well, are you talking about the relative efficiency of the lights in producing effects upon the human body?

(Testimony of Dr. Floyd Roswell Parks.)

A. Well, the relative efficiency would be much greater in a pure therapeutic or ultra-violet lamp than it would in a sun lamp, because one is emitting the rays of sunlight and the other is taking everything out except pure ultra- [484] violet rays, which are the shortest rays.

Q. The ultra-violet rays are the shortest rays?

A. The shortest rays.

Q. And is that the type of ray that comes from the respondent's lamps?

A. That is right.

Q. Is there any difference, in so far as you have been able to observe, in the effect upon the body of rays that emanate from a sun lamp and from a cold quartz lamp?

A. I didn't quite get that.

Q. Will you read the question?

(Question read by the reporter.)

A. Well, you are talking about two entirely different things. The sun lamp, as I said, gives you sun light, and the lamp put out by the respondent or a cold quartz lamp gives you more of those ultra-violet rays, which are more beneficial, and, therefore, the reaction from those two lamps in those individual cases are entirely different. One would be beneficial, and the other might be as efficient as the sun. A good sunburn is all right as far as it goes, but it doesn't go far enough.

Q. You mean, then, you can obtain the effect in a much shorter exposure from a cold quartz light than you can by going into the natural sunlight?

A. Yes. [485]

Mr. Lyon: That is objected to as leading.

(Testimony of Dr. Floyd Roswell Parks.)

Trial Examiner Reardon: It is answered.

The Witness: The cold quartz is the one best agent for putting out the ultra-violet rays in great quantities, whereas your sun lamp is only giving relatively few of those ultra-violet rays, because they have all the infra-reds, which are the heating rays, along with it. In other words, you have the whole spectrum in the sun lamp, and you have only the ultra-violet rays in the quartz.

Q. What is the effect of the use of a cold quartz light upon the human body?

A. It activates the deeper layers of the skin, the cells of the deeper layers of the skin, to produce vitamin D, which is exceedingly beneficial to the body.

Q. How does that influence the functioning of the body?

A. Well, it would improve circulation, which would help to eliminate certain waste products, in particular, your nitrogenous waste products. It is very helpful in diseases like rheumatism and gout, where your nitrogenous waste products may be stored in large quantities, or in larger quantities than in ordinary circumstances, and, of course, if those substances are eliminated, then we have a great beneficial result.

Q. Is there any effect upon the calcium phosphorous [486] metabolism? A. Yes.

Q. What is that effect?

A. Well, it helps to produce this vitamin D, which helps to improve your calcium metabolism

(Testimony of Dr. Floyd Roswell Parks.)

in disease like rickets, where that is usually under par. Of course, that is greatly stepped up to do away with rickets, and in case we have a rachitic disease, you can eliminate it entirely.

Q. Could the respondent's lamp be used as a beneficial aid in the treatment of bronchitis?

A. Yes.

Q. Is it useful in convalescence from acute illness?

A. Yes. I think that is one decided beneficial effect. I use that, and I use it in long cases of illness. I have a patient right now where we operated because of a diseased condition on the esophagus, and with its resulting infection it lowered the patient's vitality so that the patient lost about 15 pounds in weight. We have been giving her those tonic treatments in the office and she has picked up 12 pounds of that weight in the last seven weeks. We do get and see miraculous results. Just what happens, the Lord only knows, but you know you get them, and that is the essential thing.

Q. Do you feel that the use of that type of lamp, referring to the lamp that respondent manufactures, in the home without medical supervision has any danger to the layman? [487]

A. I wouldn't think so.

Q. Do you consider that it is either a good or a bad health practice?

A. Well, I think it is a decided adjunct in the home. That is the way I would like to answer that question. There are so many things that come up

(Testimony of Dr. Floyd Roswell Parks.)

in a home that it just seems impossible, from an economic standpoint in most instances, to keep running to the average doctor's office. It would be better to have something like that rather than having them go to the quack, who would give them various treatments without having the knowledge of them. I would much rather have the patient use that in his home than to do that.

Q. Do you know whether it is useful in the treatment of [488] ringworm?

A. Very useful, because one treatment will usually clear it up.

Q. Is it useful in the treatment of athlete's foot and other fungus infections? A. Yes, it is.

Q. Does it have any use in the treatment of mild acne? A. Yes, it does.

Q. What about its use in the treatment of chronic eczema?

A. Well, chronic eczema is a big term. I mean we throw in a bunch—and I don't know how many diseases would go into that category as chronic eczema. Chronic eczema usually means an undiagnosed condition, the cause of which we don't know. In most of those instances the therapeutic lamp does relieve the patient and he gets rid of his eczema. Whatever causes it, you don't know, but it certainly is an adjunct, and in a good many of those cases will completely eradicate the condition.

Q. Does it have any use in the treatment of chronic psoriasis?

(Testimony of Dr. Floyd Roswell Parks.)

A. Yes. Chronic psoriasis is sometimes—well, that is the only way you can handle it. In the acute case, no. In a chronic case it is exceedingly beneficial.

Q. Does the light have any value in the treatment of varicose ulcers? [489] A. Yes.

Mr. Tolin: You may cross examine.

Cross Examination

By Mr. Lyon:

Q. How did you happen to use the product, Life Lite, personally, Doctor?

A. Well, this patient of mine that I have mentioned, a graduate of the Harvard College and Law School, whenever he had anything in the way of a medicinal question, always came to me to ask about it. Three years ago he was rather beside himself, and although he had had many suggestions to him about his youngsters, he came to me with the problem. I believe at that time the daughter was about four, and his wife was very much upset because the little girl did not get better, she seemed to go downhill instead of going uphill. He came to me and asked me if it would be possible to have some sort of a quartz lamp which would not be harmful and would be beneficial, and he mentioned the fact that he thought he knew of such a lamp.

I went and checked up the lamp, studied it and looked it over very carefully, and told him that I was very sure that if he carried out the sugges-

(Testimony of Dr. Floyd Roswell Parks.)

tions there, and enlarging upon the distance from the body to the skin, from the lamp [490] proper, so that there would be no likelihood of getting into trouble and suggesting the time, using a very small exposure, I thought that this particular lamp we are talking about would do the job, whereas some of our other bigger lamps might be dangerous.

Q. And when you speak of this particular lamp, what lamp do you mean?

A. The respondent's lamp.

Q. And which model?

A. That one—I think it was HC or H7.

(Thereupon Commission's Exhibit 9 was handed to the witness.)

A. This particular one here (indicating).

Q. That is Model H7, sold by the respondent, Ultra-Violet Products, Inc.?

A. Yes.

Q. That was a stand model?

A. Yes.

Q. That was the first time you had heard about it, about three years ago, when this patient of yours spoke to you about it?

A. Well, I had heard about these lamps before, but I had never really carefully checked into it. The fact that I knew this Mr. Bentley very, very well, and he is very much of a student, he teaches out at the City College, I felt [491] that I should really give some time and thought to checking it up, which I did.

Q. Now, you said that you had used an ultra-

(Testimony of Dr. Floyd Roswell Parks.)

violet light in your practice. Did you use an ultra-violet light prior to the time you were talking about? A. Yes, I have.

Q. What kind of a lamp did you use?

A. One of these Burdick lamps.

Q. What type of lamp was it?

A. Well, it is a big one.

Q. So far as its classification is concerned?

A. That particular lamp which I used in 1933 was a hot quartz lamp put out by the Burdick people. I think it cost about \$700, way beyond the realm of possibility of the ordinary person buying it.

Q. That is, the hot quartz type of lamp is a much more expensive type of lamp than the cold quartz? A. Well, that particular model was.

Q. As a matter of fact, all hot quartz lamps are more expensive; are they not?

A. I couldn't say as to that.

Q. And they are primarily designed for use in a physician's office?

A. The price has been reduced. That is where I used them. I think they are used also in health resorts and these [492] training offices, where they give you exercises, and then let you lie under the lamp, which is in the ceiling, and which gives out these various ultra-violet rays. Most all of such places have ultra-violet lamps now.

Q. You have been using this hot type of quartz lamp in your practice since 1933?

A. That is right.

(Testimony of Dr. Floyd Roswell Parks.)

Q. And you have continued to use that until the present time, have you?

A. I still have it there, as an adjunct, purely.

Q. That is the hot quartz lamp? A. Yes.

Q. Well, do you use the cold quartz type of lamp in your practice?

A. Well, I do and I don't. If I have a bad case of ringworm, as I say, one treatment will usually clear it up, whereas I can get the same result with this hot quartz in about four or five treatments. It takes longer usually with a hot quartz to produce the same effect as your cold quartz. Cold quartz is much more efficient.

The only reason that I don't have it in the office is mostly due to a limitation of space. It is just one more darned thing to have around. But I am going to get one, because certain things are much more efficiently treated with the cold rather than with the hot quartz, and it is a [493] matter of saving time.

Q. Is it not true that the hot quartz lamp is much more expensive than the cold quartz lamp?

A. I couldn't say. I am not—I couldn't say as to that. I think all quartz lamps have been reduced in price.

Q. I mean relatively so?

A. I don't know. I couldn't say.

Q. Anyway, you spent \$700 for the one you have been using?

A. Yes. That has been greatly reduced since that time.

(Testimony of Dr. Floyd Roswell Parks.)

Q. And you haven't a cold quartz lamp in your office at the present time?

A. No, I haven't. I usually send those patients to the hospital, where they have one. For instance, the physiotherapy department of the Hollywood Hospital, which is a very up to date place. I was in there with a patient not so long ago, and I made the remark that I wished I knew just what the difference between those two, the hot and cold quartz was, except for the fact of saving time.

Well, the head of the department said, "I am sorry, but I can't tell you the answer to that." He said, "We like the hot quartz for some things, and the cold quartz for other things. Some of our doctors come in and wish we had a hot quartz, and we tell them we only have the cold quartz, so I don't know what the answer is on that."

Q. The price of this Model H7 is \$130, is it not? [494]

A. I believe so. Something like that.

Q. And that is much less than the price you paid for the one you are using in your office?

A. Yes.

Q. But in spite of that, you did not buy any cold quartz lamp at all?

Mr. Tolin: That is objected to as argumentative.

By Mr. Lyon:

Q. Well, this was in spite of your personal opinion that the cold quartz lamp is more efficient? Is that correct?

(Testimony of Dr. Floyd Roswell Parks.)

A. I mean in certain things. I mean, it is impossible to have everything in the office. I am not a physiotherapist, as such. I use these various things, the ultra-violet, the infra-red, the red ray, the diathermy, the long and short waves, in the particular cases where they seem to fit, but I haven't seen fit to go into this so-called cold quartz, as I say, mostly because of the space it takes up. I can send them to the hospital and they can get the same result, or they can buy their own lamp, for that matter.

Q. Well, these patients that you send to the hospital for treatment with the cold quartz, do you have anything to do with the treatment there?

A. No, I don't, except that I tell them what the situation is, and that I want them to have such and such a treatment.

Q. That is, you advise the hospital to that effect, do you? [495]

A. The department, the physiotherapy department, which is a part of the hospital.

Q. I see. Then you just turn the patient over to them for their own treatment after that?

A. For treatment. They come back to me, of course.

Q. And you don't have anything personally to do with the treatment?

A. Other than to make the diagnosis and tell them what treatment I want them to give.

Q. Then your testimony with reference to the

(Testimony of Dr. Floyd Roswell Parks.)

effects produced by such a treatment is not under your personal supervision?

A. That is under my personal supervision.

Q. I mean the cold quartz lamp at the hospital.

A. I don't give the technical application, but I tell the technician what I want him to give, the time and so forth. Of course, they watch the time, they turn it on, and all that. I am not there to give that, but I tell them what I want them to do.

Q. And you never see the treatments given?

A. Oh, yes, I have seen some given. I don't go there for every treatment, no.

Q. Then you ask to have the patient sent back to you after the treatment?

A. Just to see—we always like to see the effect produced, [496] yes.

Q. Your testimony then has been based only upon the effects you have noticed after the treatment has been had in the hospital; is that correct?

A. My testimony is based upon the knowledge that I have, and the work I have done on the hot quartz work, specifically, in my own office and at the Boston City Hospital, where I first came in contact with them, back in 1924.

Q. Well, Doctor, the hot quartz is not in issue in this case. We are talking only about the cold quartz type of lamp. Do you understand that?

A. Yes, I do.

Q. And has the testimony you have given had

(Testimony of Dr. Floyd Roswell Parks.)

to do with reference to the effects given by the hot quartz lamp, as well as the cold quartz?

A. No, my testimony is mostly, on the questions you have asked me, with reference to the cold quartz.

Q. You say that you are not a physiotherapist?

A. Not principally, no, sir.

Q. You are in general medical practice, as I understand it?

A. That is correct.

Q. Have you specialized in any particular branch of medicine?

A. I am specializing in general surgery, yes, sir.

Q. In general surgery? [497]

A. That is right.

Q. Now, what experiments did you perform personally with reference to the cold quartz type of lamp, which induced you to be favorably impressed with it?

A. Well,—

Q. I believe you stated that about three years ago you performed some experiments or did something in connection with it?

A. No, I didn't say that. I didn't perform these experiments. I went around to the various physiotherapy departments of the various hospitals, and read all I could get to read on the subject. I didn't want to recommend the use of hot quartz in the home, because it is much more difficult to handle, it takes a lot more technical skill than does the cold quartz, so I couldn't recommend that; but I

(Testimony of Dr. Floyd Roswell Parks.)

found I could recommend the cold quartz on the basis of what I had learned.

Q. You didn't actually do any experimentation of your own? You simply made inquiries from different sources, is that it?

A. Yes. That is pretty well standardized, the use of the lamp.

Q. That is, you inquired of different hospitals where it had been used; is that it?

A. I saw some of the results, and so forth, talked to various men who are using it, and, as I say, I carried on [498] quite a research with the people who had used it.

Q. Those were mostly physicians, were they?

A. Doctors and physiotherapists in these various hospitals.

Q. How many patients have you personally treated with a cold quartz lamp?

Mr. Tolin: I think the question is indefinite, in that the doctor has testified that he has sent patients to hospitals for that treatment by their physiotherapy departments, and the question might be confusing as to those cases, whether they are included within it or whether you mean only those where he has personally applied the lamp.

By Mr. Lyon:

Q. As I understand it, you have never personally used the lamp at all?

A. Not the cold quartz. As I say, I don't have one in my office.

(Testimony of Dr. Floyd Roswell Parks.)

Q. And your testimony with reference to its use is based upon what you have heard from others?

A. Medical knowledge, which is from various sources where you can attack it.

Q. You spoke of the difference between a sun lamp and a therapeutic lamp. What, in your opinion, is the beneficial effect of a sun lamp, if any?

A. Well, I think it has a certain psychological effect. I went into that some time ago. The General Electric was [499] putting out such a lamp, and I wanted to give that to my patients, provided I could see that definitely it did some good. Well, frankly, on the knowledge that I have been able to gather, I would question its real value, other than in actual sunlight.

Q. A sun lamp is designed to produce effects comparable to that of natural sunlight?

A. I think so. They say it does more than that, but I can't see it.

Q. Well, in your opinion, is natural sunlight of any effectiveness?

A. Yes, it is. Of course, the benefits of a lamp is that you have it for 12 months in the year, and the sun, with its intense rays, you have for only relatively short periods of the year.

Q. I believe you stated that the sun lamp did not contain any ultra-violet rays. Was that your statement?

A. No, I didn't say that. I said that it contained relatively few by comparison with the therapeutic lamp.

(Testimony of Dr. Floyd Roswell Parks.)

Q. And the rays that it does contain include the ultra-violet rays?

A. It contains all the rays in the spectrum.

Q. They are a longer type of ray than the ultra-violet rays in a therapeutic lamp, are they not?

A. Well, ultra-violet light is at one end of the spectrum, [500] and your infra-red at the other end; one is relatively visible, and the others are not visible. Your ultra-violet are not visible in the pure sense of the word and are much more penetrating rays than the other parts of the spectrum. I don't know just what you are trying to get at there.

Q. Well, speaking with reference to the angstrom units, that is a measurement of unit, is it not?

A. Yes, sir.

Q. With reference to ultra-violet rays and also any other kind of rays?

A. The longer rays would be found, I would think, in your pure lamp, that is, your therapeutic lamp. Other than the sun, you mean?

Q. Yes, that is what I am talking about.

A. Yes.

Q. You mean the longer rays are found in the sun lamp rather than the therapeutic lamp; isn't that correct?

A. Well, your angstrom units are much greater in your therapeutic lamp. Now, what are you trying to get at? I don't just get it.

Q. Well, what is your idea of it, Doctor? Is it your idea that the shorter rays, the shorter ultra-

(Testimony of Dr. Floyd Roswell Parks.)

violet rays are found in the sun lamp or in the therapeutic lamp?

A. I would say the longer rays were found in your therapeutic lamp. [501]

Q. You have never made any study especially of physiotherapy?

A. Well, I have made studies, but that is purely a physical problem. They tell us what it is capable of, so many angstrom units per given period of time, and that is all I am interested in.

Q. Isn't it a fact, that is, isn't it a medical fact that lamps which emit rays of 2800 angstrom units or more are sun lamps, as distinguished from lamps emitting ultra-violet rays of 2800 angstrom units or less?

A. Well, your sun lamps would be the lower figure of your angstrom unit output, or whatever you want to put it, and the other lamps contain more.

The Witness: And that is a matter of physics. I mean, that is not so much medicine.

By Mr. Lyon:

Q. And that is not your specialty?

A. I am not a physicist personally, no. [502]

Q. What would you say would be the benefits to the skin of rays of 2540 angstrom units? What beneficial effects would there be on the skin?

A. Well, it would probably give a reddening of the skin, a blush.

Q. Is that a beneficial effect?

(Testimony of Dr. Floyd Roswell Parks.)

A. Yes, I think so. You get a certain tonic effect. You bring the capillaries to a greater capacity; that is, they are dilated. The blood is brought to the surface, and such as ordinary sunlight would give you the same effect.

Q. That would be the same effect as from ordinary sunlight?

A. I mean, that would be the same effect as from ordinary sunlight.

Q. That would be known as erythema, Doctor?

A. Yes.

Q. What other beneficial effects would there be in rays of that length?

A. Well, it would tend to raise the temperature of the body, which would produce a leukocytosis, an increase of the white cells, particularly the polymorphonucleic leukocyte cell.

Q. What other beneficial effects would there be?

A. That is about all. The matter of heat, as I said, raises your temperature. That is about all.

Q. There would be no benefit, then, so far as the vitamin D activation would be concerned? [503]

Q. There would be some, but that wouldn't be the biggest factor. You would only have the beneficial effect, so far as vitamin D is concerned, that sunlight, that is, the amount of sunlight or the spectrum would give you, so far as the ultra-violet end of the spectrum is concerned; and, of course, sunlight is made up of all of those various bars of light.

Q. We are talking of rays of 2540 angstrom

(Testimony of Dr. Floyd Roswell Parks.)

units. Is that the spectral range of the cold quartz lamp, do you know?

A. I believe that the cold quartz lamp is on the upper end of that, extends beyond 2500, that is, 2500 is relatively fewer.

Q. 2500 angstrom units is relatively what?

A. I mean, that is a small amount of angstrom units for the maximum.

Q. In your opinion, the cold quartz lamp would not have angstrom units of that spectral range; is that correct?

A. Well, it would to a lesser degree, yes.

Q. What would your idea of the spectral range of the cold quartz lamp be? What would be the length of the ultra-violet rays emitted by such a lamp?

A. Well, you would have a much greater range in your therapeutic lamp.

Q. And what would that range be?

Mr. Tolin: That is objected to on the ground that [504] this witness has not been examined on direct examination upon the physical aspects of this light, but only upon its use in therapeutics.

Mr. Lyon: Well, I think it is evident that he is not an expert along that line, so I will refrain from any further questions to that effect.

Q. Coming to those specific diseases that you talked about, Doctor, I believe you stated that the cold quartz lamp would have a beneficial effect, would be of beneficial aid in the treatment of bronchitis. Now, what would that beneficial aid be?

(Testimony of Dr. Floyd Roswell Parks.)

A. Well, you increase the resistance of the individual by stimulating the production of vitamin D, through bringing the blood to the surface of the body. That production of vitamin D is much greater in ultra-violet therapy as against what you would expect in some of the other forms, such as sunlight.

Q. What is bronchitis, Doctor?

A. An inflammation of the bronchial tubes.

Q. What is the treatment that you ordinarily use for that particular disease?

A. Well, it is mostly a combination of treatments.

Q. And the use of a cold quartz lamp would be simply an aid in such a treatment; is that correct? [505]

A. Just as an adjunct.

Q. Would it by itself be of any assistance in the treatment of such a disease, without anything else in addition to it? Per se, I mean?

A. You mean the lamp by itself?

Q. Yes, the ultra-violet lamp.

A. Cure the disease?

Q. Yes.

A. I don't know. I probably wouldn't try it just by itself.

Q. Upon what did you base your opinion that it would be a beneficial aid in the treatment of bronchitis? What experience have you had in the treatment of bronchitis with the use of such a lamp?

A. Well, in the chronic cases you are glad to

(Testimony of Dr. Floyd Roswell Parks.)

use anything, and that is the ones that I turn over to the physiotherapy department for help.

Q. That is, you haven't treated any of these bronchitis cases yourself?

A. That is, not myself with cold quartz, no, sir. I have sent them to the hospital to be treated, and often you send such a patient with bronchitis to the hospital to stay for a few days, and he gets a quartz treatment purely as an adjunct.

Q. And he gets a lot of other different treatments, in addition to the cold quartz, would you say, in the hospital? [506]

A. Well, you use various drugs, naturally.

Q. That is what I mean. A. And rest.

Q. There are several other things that are being done at the same time?

A. This is just an adjunct, that is all.

Q. In your opinion, you could not separate the value of one from the value of the other?

A. I say that you muster all the help you can get, no matter where you have to look for it.

Q. And there would be no way of telling just what part the ultra-violet ray would play in such a condition?

A. Well, it seems to have a very beneficial effect.

Q. I mean by that, Doctor, have you performed any experiments or had any experience in the treatment with and also without the use of such rays, in the treatment of bronchitis?

A. Well, some cases of bronchitis clear up very rapidly without much difficulty, whereas others are

(Testimony of Dr. Floyd Roswell Parks.)

very persistent, more chronic, harder to eliminate. Those are the cases where you bring into play anything that you have ever heard of as being helpful.

Q. Hoping that one of them might help; is that right? A. Yes.

Q. But there would not be any way to tell which one did the work in case there was a cure? [507]

A. It would be difficult to estimate just which did which, but we do know it is beneficial. I have seen it too many times.

Q. What I am trying to find out is upon what you base your opinion that it has been beneficial. Have you seen any cases that have been cured?

A. Have seen good results.

Q. (Continuing) Or where you attribute the results to the lamp?

A. With a persistent case of chronic bronchitis, which would not clear up with ordinary means, using a quartz lamp is certainly a help to shorten the condition. It shortens the disease. Just how, I don't know. It just does.

Q. And you say you have had cases like that in your own experience? A. Yes.

Q. Upon what do you base your opinion that the use of cold quartz light would aid in convalescence?

A. Well, there, again, seeing is believing, seeing is the best judge. It does tend to raise your resistant factors in the body, and I believe it helps to create an appetite which might be lost in the illness. In surgical cases, in fracture cases and things

(Testimony of Dr. Floyd Roswell Parks.)

like that, I know that it is a great help. I have seen that with the results that we have obtained. As I say, seeing is believing, and seeing [508] is the best judge. If you did not get your results, you would not use it.

Q. How did you know, Doctor, that the ultra-violet lamp caused those results?

A. Well, again the way you use anything is to go around and see what other people are doing, the results they obtain, what they tell you, what you can read, then you use it yourself and you are convinced with the results that you obtain.

Q. You say that you haven't used this yourself in your own practice?

A. Not in my office, no, sir. It has been at the hospital and through these lamps that we have put out to the patients, where they couldn't afford the hospitalization or where it did not seem advisable.

Q. In all these cases that you have spoken about, the cold quartz lamp was used simply as an adjunct in the treatment; is that correct?

A. Well, in certain cases specific treatments—your ringworm responds very rapidly. Usually one treatment will eliminate it. That is fairly common out here with dogs and cats around. I usually don't bother with it at the office. I just send them to the hospital and one shot is enough.

Q. That is, the ringworm cases that you have had you have [509] not treated yourself, but have sent to the hospital?

(Testimony of Dr. Floyd Roswell Parks.)

A. I am not doing it now, since I have seen the effects with cold quartz.

Q. What are you doing now?

A. Sending them to the hospital. As I say, they clear up with one exposure, as a rule.

Q. That is, you send them to the hospital with instructions to have the cold quartz used on them?

A. That is right.

Q. Now, as I understand it, you haven't personally performed any of these experiments or done this work yourself. This has all been in the hospitals? A. With reference to what? [510]

Q. Well, all of the other diseases you speak about, athlete's foot, acne, eczema, psoriasis.

A. Well, I have had several patients that have this lamp at home, and athlete's foot practically everybody has, and I find they have used that with benefit. I don't even attempt to have those patients come to my office, that is, except for the one time to make the diagnosis. It is relatively a chronic disease and rather persistent, and your cold quartz does help that. The hot quartz I have found absolutely to be worthless, so far as that is concerned. I mean, it takes too long to eliminate it.

In passing, I might say that I had a star from the University of Pennsylvania football team, who had a large area of a skin condition on his tibia, which I diagnosed as athlete's foot. It had been spreading and he had had it for a number of months. I thought cold quartz would do it some

(Testimony of Dr. Floyd Roswell Parks.)

good, so I sent him to the hospital and in two treatments the darned thing was completely eliminated.

Q. What kind of treatments?

A. With cold quartz.

Q. Was there anything else used at that time?

A. I didn't use anything else. He had used everything under the heaven, countless things, with no effect.

Q. Isn't it a fact that other things are usually used in addition to ultra-violet rays in such a condition? [511]

A. I don't see any point in using them. I mean, you just use irritating substances, and your cold quartz lamp will do that very thing and do it much more effectively.

Q. Now, in your opinion, do the ultra-violet rays of a cold quartz lamp penetrate beneath the surface of the skin?

A. I don't think they do.

Q. You think they would be just on the surface?

A. Through the layers of the skin they will go, but they won't go beyond that.

Q. Well, do you mean by that all of the layers of the skin, or just the superficial layers?

A. Well, down to the so-called sub-strata layer.

Q. Most of the other diseases and conditions we have been talking about, such as acne, eczema, psoriasis, and so forth, are mostly conditions affecting the skin, are they not, below the superficial layers?

A. I wouldn't say so.

(Testimony of Dr. Floyd Roswell Parks.)

Q. Would you say they were diseases affecting the superficial layers of the skin?

A. *The* affect the skin. The skin is found in many layers, depending upon which classification or which anatomist you want to follow. You divide it up into these various layers. The skin diseases, of course, are those diseases which are relegated to the skin, and in speaking of skin problems such as acne, why, it is usually the outer layers [512] of the skin. That may extend down or does extend down to the follicle cells, which are present in really the outer two-thirds, dividing up those layers into three groups, three parts.

Q. Isn't it a fact that most of those diseases that you have mentioned affect the underlying layers of the skin, that is, below the surface?

A. Well, some of the so-called deeper layers. As I say, all of those diseases which we have mentioned affect one or more layers of the skin. They may affect the superficial half of all layers. That is a microscopic analysis purely that we are mentioning now.

Q. You are not a dermatologist, Doctor?

A. No, sir.

Q. You have never made any particular study of skin diseases, have you, Doctor?

A. I thought I was a good dermatologist at one time. That was when I was a student.

Q. But you have never done any special work along that line?

A. No, no special work, no, sir.

(Testimony of Dr. Floyd Roswell Parks.)

Q. Most of your skin cases you send to be treated by dermatologists, do you?

A. That is right.

Q. And you have never per se treated any of the conditions [513] that you have mentioned in your testimony?

A. That is not right, no, sir. I have treated them. The only case that you have mentioned or that somebody mentioned, I guess it was in the first part of the discussion, was this lupus erythematosus, which is a rare thing, and I have seen two cases in my lifetime. If I had that come in, I would send it to the best skin man or several skin men that I could think of. But the other things you have mentioned are relatively common diseases and any doctor comes in contact with them.

Q. Have you treated them personally yourself?

A. Yes, sir.

Q. But not with the cold quartz lamp?

A. Not the cold quartz lamp.

Q. What treatment did you give for those particular diseases?

A. Well, treatment changes from time to time, and as I say, whereas I used to treat some of these things myself, now I send them directly to the hospital for the physiotherapist to handle with his instruments, so to speak. If it is in a case which is going to be of long standing and the patient for one or more reasons could profit by using some sort of a lamp, then I have recommended this lamp that we are talking about in the home.

(Testimony of Dr. Floyd Roswell Parks.)

Q. What medical associations do you belong to, Doctor? [514]

A. The Los Angeles County, the State of California, the American Medical, and the various surgical groups, both the Los Angeles Surgical group and the American College of Surgeons.

Q. Are you familiar with the Council of Physiotherapy of the American Medical Association?

A. Yes. I see their writings in the American Medical Association Journal that comes out every week.

Q. Are you familiar with the distinction which is made by that Council between therapeutic lamps and sun lamps?

A. Well, yes, I think I am, in a general way.

Q. What is that distinction?

A. Well, the sun lamp does not filter out or produce the ultra-violet rays exclusively or almost exclusively, whereas the ultra-violet therapeutic lamp tends to do just that thing. [515]

Redirect Examination

By Mr. Tolin:

Q. How long have you had your hot quartz lamp? A. Since 1933.

Q. At that time was the cold quartz well known in the market?

A. No, sir. It was just barely coming in. We didn't know [519] much about it at that time. [520]

Mr. Tolin: The respondent has now closed its case, but at the time the first witness for the Com-

mission was on the stand, Mr. Warren, the cross examination was deferred. I would like to conclude that cross examination of that witness now.

THOMAS S. WARREN

was thereupon recalled as a witness on behalf of the Commission, and having been previously duly sworn, testified as follows:

Cross Examination

By Mr. Tolin:

Q. Mr. Warren, you testified on direct examination that you held most of the stock of the respondent corporation. Is that correct?

A. That is true. [521]

Q. Does the corporation have a board of directors?

A. Yes. The board of directors meet, well, it depends upon the conditions, but I would say on the average of three times a year.

Q. Is the active management of the corporation directed by that board of directors?

A. Not the active management, no; but the general policies are discussed and suggestions are made, and I attempt to follow the policies and program as we work out at the meeting.

Q. Are those directors persons who are financially interested in the company?

A. All but one.

Q. How many do you have on the board?

(Testimony of Thomas S. Warren.)

A. Five.

Q. Are you a board member yourself?

A. Yes.

Q. You have heard of corporations that are one-man corporations, in which one man simply incorporates his business. This is not that kind of a corporation, is it? A. No.

Q. When did you first work with ultra-violet light?

A. I first started working with ultra-violet light in 1929.

Q. Where was that?

A. That was with the Metlox Corporation, and it was at [522] their factory at that time on North LaBrea Avenue in Los Angeles.

Q. Prior to that time did your study ultra-violet light?

A. No, no real study of it prior to that time. Since that time—well, at that time I was placed in charge of a department which they expected to make an important part of the company, and I was to develop the ultra-violet lamp department, and that I proceeded to do.

Q. Had you had any training in college before that?

A. I had a thorough course in physics in college, which included light, and when I took over the building up of this department I went to Cal. Tech., with the lamps which we made in our laboratory, and I had them analyzed by Dr. Neher, who is Dr. Millikan's first assistant, and also Dr. Beeler.

(Testimony of Thomas S. Warren.)

We checked the wave lengths, made photographs of the wave lengths, checked the intensity of the light at various wave lengths.

Q. You have mentioned "Cal. Tech." Do you mean the California Institute of Technology?

A. Yes.

Q. So whenever we have occasion to say the California Institute of Technology in the evidence here we will simply say "Cal. Tech.," as a matter of using a convenient abbreviation.

A. Right.

[523]

Q. You say that you took some tube to certain professors at Cal. Tech. Was that the tube that is used in your product, the Life Lite?

A. That is a tube identically the same. It was a cold quartz type of tube lamp. We not only took it to Cal. Tech., but we took it to certain laboratories in Los Angeles, where we had bactericidal tests made with it, and we had at that time about six or eight doctors using the lamp in their practice, to determine the results from the use of it, so that we would have first hand information, which we could compile into the literature which we were going to compile and which we later did compile.

Q. When you say "we", whom do you mean?

A. I mean the company.

Q. The Metlox Corporation?

A. The Metlox Corporation.

Q. By whom you were then employed?

A. That is right.

Q. And by the tube, you mean the tube that was

(Testimony of Thomas S. Warren.)

used by the Metlox Corporation in their ultra-violet light? A. Yes.

Q. How long were you with the Metlox Corporation in that ultra-violet work?

A. I was with them until July of 1932.

Q. Where did you go from there, so far as employment is [524] concerned?

A. I started the Ultra-Violet Home Products Company, which was at that time my own business.

Q. That was the predecessor in interest of the respondent corporation? A. That is right.

Q. Did you at that time start to manufacture and sell to the public a light that is identical to your present Life Lite, in so far as the tube in it is concerned?

A. Yes. The tube at that time was a little different in shape, used a little different current than what was commonly called the cold quartz lamp, and at that time everything was new and we were developing, and the tube that we used in the little Model A Life Lite lamp was only about six inches long and used 100 milliamps instead of the usual 25 or 30, which is customary in a cold quartz lamp or was at that time, so to be absolutely certain that there were no wave lengths being formed different than what we had been accustomed to in the standard cold quartz lamp, I took the Model A hand lamp to Dr. Leighton.

Q. Do you mean your ultra-violet Life Lite?

A. I mean the Life Lite Model A hand lamp.

Q. Yes.

(Testimony of Thomas S. Warren.)

A. I took it to Pomona College where Dr. Wesley Leighton was in the chemical department there, and he had been doing [525] a good deal of research work with ultra-violet radiation, and I worked with him taking the measurements and the readings of the ultra-violet output of the Life Lite Model A lamp. These I have a very complete record of, and they have checked exactly with the standard output of the cold quartz type lamp.

Q. The Dr. Leighton to whom you have just referred is not the Dr. Leighton who testified in this hearing? A. No, a brother.

Q. What was his connection with Pomona College at that time?

A. He was professor of physical chemistry.

Q. I refer now to Commission's Exhibit 41-A, which is a letter on the letterhead of Ultra-Violet Products, Inc., addressed to Mr. P. B. Morehouse, Director of the Federal Trade Commission, Washington, D. C., in which you give the electrical output and input by lamp of various models of the lamp. Where did you get the information that is contained in that letter, which I now show you to refresh your memory?

(Handing document to witness.)

A. That information was secured from my electrical engineer, and also from tests in our own shop with a wattmeter.

Q. Did you obtain any of that information in your work with Dr. Leighton at Pomona College?

(Testimony of Thomas S. Warren.)

A. Some of it is based upon results of work there, but not [526] specifically regarding these tests.

Q. I show you a paper, which I will ask the reporter to mark as the respondent's exhibit next in order, and ask you to look at it and tell me if you know what it is.

(The document referred to was marked "Respondent's Exhibit No. 7" for identification.)

A. This is the original chart showing the readings of the intensity of the various wave lengths of the Life Lite Model A lamp, made by myself and Dr. Wesley Leighton.

Mr. Tolin: I offer it in evidence as the respondent's next exhibit. [527]

(The document heretofore marked "Respondent's Exhibit 7" for identification, was received in evidence.)

By Mr. Tolin:

Q. Now, just what work did Dr. Leighton do on the Life Lite [528] tube that you are using at the present time?

Mr. Lyon: That is objected to as calling for hearsay testimony.

Trial Examiner Reardon: What was that question?

(The question was read.)

Trial Examiner Reardon: You may testify to what you actually saw him do when you were present, and not anything else.

(Testimony of Thomas S. Warren.)

The Witness: He and I worked together. We took the standard tube of the Model A Life Lite lamp, using a standard transformer that put about 100 milliamps current through the tube, and we measured the ultra-violet output.

Trial Examiner Reardon: That is what you saw the doctor do?

The Witness: I worked with him. We did it together.

Trial Examiner Reardon: I see. All right.

The Witness: I fastened the tube in the section and we got it close to the microgalvanometer slip, and he adjusted the slip to get the more accurate readings. He did that because he was more familiar with it than I was, and I helped him take the readings from the galvanometer.

By Mr. Tolin:

Q. What work did Dr. Neher do in your presence, with respect to the tube you are now using in the Life Lite?

A. Dr. Neher did exactly the same work in the same way [529] at Cal. Tech. here previously, by using the standard small board, eight to nine millimeter quartz tubes, which had a current passage of about 25 to 30 milliamps, and the reason I made the later test was to find out if the higher current raised the wave length or altered in any way the ultra-violet output from the cold quartz type lamp.

Q. Referring to Commission's Exhibit No. 2, this red caution card, where did you get the material that you used in composing this card?

(Testimony of Thomas S. Warren.)

A. I got that material from a Burdick quartz lamp, and I have been told that that was——

Mr. Lyon: Just a minute. I object to what he was told.

Trial Examiner Reardon: Yes. You can't say what you were told.

The Witness: All right. That is where I got it.
By Mr. Tolin:

Q. You have identified and there has been introduced in evidence here several instruction cards with respect to the Life Lite. Referring to Commission's Exhibit 7, Commission's Exhibit 6, Commission's Exhibit 1, Commission's Exhibit 5, Commission's Exhibit 3, and Commission's Exhibit 4, where did you obtain the information that is set forth on these exhibits?

A. I obtained that information from my contact with the [530] physical therapists in several different hospitals in Los Angeles, and from a very broad, I think, reading of the subject of ultra-violet light. [531]

Q. Have you read the available literature regularly during the years you have been working with ultra-violet light

A. Yes, I have, very consistently.

Q. Can you tell us whose works you have read respecting [540] ultra-violet light?

A. Yes. I have read the books by Russell and Russell. I have read the books by Dr. Rosewarne, Dr. Humphreys. I have read the book on ultra-

(Testimony of Thomas S. Warren.)

violet light by Dr. Plank. I have read the book on ultra-violet light by Ellison and Wells. I have read the compilation of the reports on ultra-violet light by Dugan. I have read the book on ultra-violet light and vitamin D by Blunt and Cowan.

I have read the parts of the book relating to ultra-violet light by Dr. Kovacs and Dr. Krusen, and there are two or three others I don't recall right now on physical therapy and skin diseases.

Q. Have you read any of the writings of Dr. Hibbins on that subject?

A. I have read a great many articles in magazines, including the one by Dr. Hibbins.

Q. Which magazines do you refer to?

A. I refer to medical magazines primarily. Occasionally, a scientific magazine contains good information on the use of ultra-violet light.

Q. Well, "medical magazines" is a broad subject.

A. Specifically, I refer to the Archives of Physical Therapy, X-ray, Radium, and the Journal of the American Medical Association.

Q. Have you drawn upon material which you have found there [541] as the source material upon which to base your literature?

A. I certainly have.

Q. Now, how long is it that you have been vending Life Lites?

A. The Life Lite lamps were first put on the market in November, 1932. [542]

THOMAS S. WARREN

was thereupon called as a witness for the respondent, having been previously duly sworn, testified as follows:

Direct Examination [545]

By Mr. Tolin:

Q. Do you rent these lights or are they all sold outright to the user?

A. We rent probably 90 to 95 per cent of the lamps before they are sold.

Q. You mean by that, that you sell second hand lamps or what is the custom with respect to rental?

A. We rent the lamps, and allow the rental to apply towards the purchase price, and our experience is that between 40 and 50 per cent of the lamps that are rented, or probably about half go into sales. The other lamps come back and we either re-rent them for a period of time or they may later be sold as a used lamp.

Q. You mean that about 45 per cent of the lamps that are rented are purchased by those original renters? A. That is right.

Q. Do you believe that the price of the lamp has any qualifying effect upon the type of user or the market to which your article is directed?

A. A very definite one.

Mr. Lyon: Just a minute. That is objected to as calling for an opinion and conclusion of the witness, a matter [546] on which he is not qualified to speak as a witness.

Trial Examiner Reardon: I sustain the objection. [547]

(Testimony of Thomas S. Warren.)

Q. What are the prices at which your lamps have been sold during the year 1940?

Trial Examiner Reardon: You are talking about this type of lamp?

Mr. Lyon: That is objected to as immaterial.

Trial Examiner Reardon: Objection overruled. Specify the lamp and give the prices.

The Witness: The prices of the lamps are: They are sold at, begin at \$49.50 for the Budget Model, \$60.00 for the Model A Life Lite, \$75.00 for the Deluxe Model.

By Mr. Tolin:

Q. Deluxe model what?

A. Life Lite. (Continuing) \$84.00 for the Universal model Life Lite; \$130.00 for the Model H7 Life Lite.

Q. Are those prices still in effect?

A. The prices are current today. [550]

(Whereupon at 3:40 o'clock P.M., June 11, 1941, the hearing was adjourned sine die.)

[554]

CERTIFICATE

This is to certify that the attached proceedings before the Federal Trade Commission in the matter of: Docket No.—4407. Case Title—Ultra-Violet Products, Inc. Place—Los Angeles, California. Date—June 11, 1941, were had as therein appears, and that this is the original transcript thereof for the files of the Commission.

ETHEL E. FISHER & ASSOCI-
ATES, INC.,

Official Reporters.

By D. MacMILLAN,

Assistant Secretary.

FEDERAL TRADE COMMISSION

4401 COMMISSION'S Exhibit No. 1
 THE MATTER OF *Ultra Violet Products*
 vs. *James*
 DEFENDANT
 JAMES J. JAMES

MODEL A
 WITH QUARTZ TUBE

Operates on 110-120 Volt Alternating Current,
 50-60 Cycles

CAUTION: Goggles must be worn to protect the eyes
 from sunburn all the time the light is on.

This lamp is to be operated from 110-120 Volt Current, 50 or 60 cycles. This is the ordinary house current. Do not plug the cord into a wet current outlet as the tube will not light and the transformer will overheat and burn out.

When the lamp has been plugged into the proper current the light turned on by means of the automatic time switch. Turn the pointer the switch slowly but firmly to the right. By the time the pointer reaches the number 3 on the dial, one or two clicks will be heard and the switch is ready for setting to the proper interval. To set for a one minute interval the pointer must then be returned to number 1. To set for a longer interval the pointer is advanced to the point desired. The total time for which the lamp will burn is indicated by the number opposite the tip of the pointer. At the end of the time set the light will automatically turn off.

Directions for Use

Goggles are furnished with every lamp and it is vitally important wear them as the ultra-violet rays will sunburn unprotected eyes which makes them inflamed and painful but which causes no other harm beyond.

Uncover the portion of the body to be exposed, as the passage of ultra-violet through clothing is very limited.

Best results may be expected if your physician is consulted concerning frequency and length of treatment. This particularly applies to infants and children. Your physician is the proper guardian of your health.

LIFE LITE ULTRA-VIOLET LAMP

The ultra-violet rays are generated in the tube. These rays are visible. The visible light that you see from the tube is not ultra-violet. It has little if any therapeutic effect. It is only the invisible ultra-violet which has the chemical (tactile) effect on the body cells; it forms Vitamin D, produces erythema (sunburn), and has a bactericidal action.

TREAT THE ABDOMEN

The ultra-violet rays have very slight penetration and for this reason it is desirable to treat that part of the body in which the blood is closest to the surface. Best results are obtained by treating the abdomen and chest areas because 70 per cent of the blood that enters the skin capillaries comes to the surface in these areas. It is advisable to take treatments in a warm room, as the blood will be nearer to the surface of the body than when exposed to a chilly temperature. Under these conditions it is possible to receive a much better result than if the cold air is striking the skin and causing the blood to recede in the deeper tissues.

TYPES OF PEOPLE

Blonds and brunettes react differently to the ultra-violet. A brunette will usually require longer exposures while the fair-skinned blonde usually reacts readily. Age must also be considered; the very old and very young demanding greater caution. Children up to four or five should be given shorter treatments and it is best to give the treatments in the mornings. Some adults also find it preferable to take treatments in the morning rather than in the evening because of the stimulative effect of the rays.

TREATMENTS

For a general body sunbath: Turn the lamp on for one minute, hold the lamp about one-half inch from the skin and pass the lamp over the chest and stomach. One or two minutes distributed over the chest and stomach is enough for the first treatment. Infants, and young children, or very fair-skinned adults should be started at from one-quarter to one-half of the above exposure times. The time may be increased one minute each day until a light pinkish flush of the skin is obtained, which will show up about six hours after the treatment. Once the desired reaction is established, continue the daily treatments with this same length of time as long as the reddening continues. If the skin becomes accustomed to the rays the time may be increased until the desired effects are obtained.

KEEP THE LIGHT MOVING

Keep it moving slowly over the body all the time. This gives an even distribution of the rays and prevents spot sunburning. Never give a long enough treatment to get an extreme reaction; if you should, allow an interval of three or four days before the next treatment. One person may receive the beneficial effects of the ultra-violet rays in a two-minute or three-minute treatment, while another person will require a six-minute or seven-minute treatment over a selected area, such as the abdomen and chest. It is obvious that it is not the length of time that determines the treatments, but the required reaction through an amount sufficient to produce the slight reddening of the skin.

It is important to use the lamp always at the same distance from the skin; for the intensity is greatly affected by a change in distance because the intensity varies inversely as the square of the distance.

Erythema—is the sunburn which appears 4 to 6 hours after the ultra-violet treatment. It will last from 12 to 36 hours and is usually followed by a slight peeling of the skin.

CLEANLINESS

Be sure to remove all ointments or salves before treatments, as the ultra-violet light does not penetrate very deeply, scarcely one-sixteenth of an inch, and so all surfaces should be as clean as possible.

CLEAN TUBE AND REFLECTOR

Keep the tube as clean as possible at all times. Use cleaning solvent or alcohol to keep the tube and reflector clean. Dust, grease, or finger prints will greatly reduce the intensity of the ultra-violet rays coming from the tube.



COMMISSION'S EXHIBIT No. 2

[Printer's Note: Commission's Exhibit No. 2 is a tag reading as follows:]

The warning label on this unit is attached as required by the recent Federal Food and Drug act.

There has been no change in the construction, operation or use of this apparatus.

(Reverse side)

Caution

To be used only by or on the prescription of a physician fully licensed and qualified by training and experience in the use of ultra-violet radiation.

A survey of accepted medical literature indicates that treatment of certain pathological conditions with ultra-violet radiation may be harmful.

In those conditions in which treatment is not contra-indicated, the physician will consider the type and extent of pathology present, and make such modifications of treatment as may be indicated.

Treatment may be contra-indicated in the following conditions:

Active and progressive pulmonary tuberculosis.

Advanced heart disease without compensation or myocarditis in the aged.

Advanced arteriosclerosis.

Gross renal or hepatic insufficiency.

Certain types of generalized dermatitis.

Acute or chronic nephritis.

Diabetes, hyperthyroidism and photosensitization.

Do Not expose the eyes to the direct light from this lamp. Wear suitable goggles.

ULTRA-VIOLET PRODUCTS, INC.

5205 Santa Monica Boulevard

Los Angeles, California

FD-12

SPECIAL BOARD OF INVESTIGATION

PUBLISHED ADVERTISEMENTS

(Examiner) Rug(Pre. Rev. Date) 10/3/39(Publication Name) Los Angeles Examiner

(Examiner)

(Pre. Rev. Date)

(Date of Issue) 9/10/39(Name of Advertiser) Ultra-Violet Products Inc(Page No.) See 7 p. 12

FEDERAL TRADE COMMISSION

Case No. 4407 COMMISSION'S Exhibit No. 10IN THE MATTER OF Ultra-Violet ProductsDATE July WITNESSES JamesREPORTER John

ETHEL E. FISHER & ASSOCIATES, INC.

63

A12

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SPECIAL BOARD OF INVESTIGATION

PUBLISHED ADVERTISEMENTS

(Examiner) Aug(Pre. Rev. Date) 6/6/34(Publication Name) Health Culture

(Examiner)

(Pre. Rev. Date)

(Date of Issue) 6/39(Name of Advertiser) Ultra Violet Products, Inc.(Page No.) 62**(Keep Your SKIN Clear)**

and your skin of acne, eczema, pimples, etc., infections, etc. safely, quickly, and surely right in your home. Q2's Lite quartz ultra violet lamps heal most skin diseases and impart that much sought-after clear healthy tone to the skin. Lamps sold or rented anywhere in the U. S. A. Write for folder HC-25.

ULTRA VIOLET PRODUCTS INC.
6156 Santa Monica Blvd. — Los Angeles, Calif.

FEDERAL TRADE COMMISSION

Exhibit No. 11
Cochet No. 4407

IN THE MAT. OF Ultra Violet Products

DATE 6/18/41 V. H. 22 James

ASSOCIATES, INC.

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group, think

DEAFNESS

is cured Every deaf person knows that. If you are deaf hear about my Artificial Invisible Ear Drum. Wear with comfort continually. No wires, battery or head phone. Nothing to get out of order. Inexpensive.

ULTRA-VIOLET PRODUCTS, INC.
DEPT. E-49
6106 Santa Monica Boulevard
Los Angeles Phone BR. 2171 California



4407
5/24/44
Yellow-Yellow Products
Karnal
Yellow

One or the other of these ads have been running continuously in the L. A. Sun-Sentinel Examiner since February, 1939.

is your PROOF of advertisement to appear in

JUN - 1939

Issue of HEALTH CULTURE

IMPORTANT HEALTH CULTURE

that we receive corrections with O. K. by MAY 15 1939
Otherwise it is understood that ad will appear as shown.

1133 Broadway, New York, N. Y.

Keep Your SKIN Clear

Rid your skin of acne, eczema, Psoriasis, sores, ulcers, infections, etc. safely, quickly, and easily right in your home. Life Like quart ultra violet lamps heal most skin diseases and impart that smooth smooth-after clear healthy tone to the skin. Lamps sold or rented anywhere in the U. S. A. Write for folder HC-25.

ULTRA VIOLET PRODUCTS INC.
6156 Santa Monica Blvd.
Los Angeles, Calif.

MAY 31 1939
5739

FEDERAL TRADE COMMISSION

Booklet No. 1417 COMMISSIONER'S Exhibit No. 15
IN THE MATTER OF Ultra-Violet Products
DATE 5/21/39 WITNESS James
REPORTER Jellman
F. EDL. E. FISHER & ASSOCIATES, INC.

RECEIVED
SEP 6 1939
RADIO AND PERIODICAL
DIVISION

72

A h

COMMISSION'S EXHIBIT No. 16

Copy of Advertisement appearing in May, 1939
issue of Health Culture

HEALTH LAMPS

Quartz ultra violet rays normalize body chemistry!.
Life Lite rebuilds your resistance to colds, increases
vitality, and heals most skin diseases. Ask for free
home demonstration or send for folder HC-24.
Rental or sales

Ultra-Violet Products, Inc.
6158 Santa Monica Boulevard
Los Angeles, California

[Stamped]: Received Sep. 6, 1939. Radio and
Periodical Division.

COMMISSION'S EXHIBIT No. 17

Copy of advertisement appearing in April, 1939
issue of Health Culture

Skin Diseases—Acne, Eczema, Psoriasis, sores,
ulcers, infections, etc. Life Lite quartz ultra-violet
lamps heal most skin diseases safely, quickly, and
easily at home. Lamps may be rented or purchased
anywhere in the United States. Write for Folder
HC-23.

Ultra-Violet Products, Inc.
6158 Santa Monica Blvd., Los Angeles, Calif.

[Stamped]: Received Sep 6, 1939. Radio and
Periodical Division.

COMMISSION'S EXHIBIT No. 21

Copy of Radio Program over KIEV, 850 Kilocycles, Cannon System, Ltd., Glendale, Calif.

Two weeks commencing 2/15/39

There's no substitute for the sun—but you can get almost the same benefits . . . with Life Lite . . . and it's health giving Ultra-Violet Rays . . . Get your quota of sun light with Life Lite . . . clear up most of your chronic skin disorders . . . build resistance against disease . . . AND relieve pain. Sufferers from Psoriasis, Acne, Eczema, Ulcers, and Impetigo, have obtained noticeable improvement after consistent use of Life Lite . . . It costs only \$8 to \$10 a month to rent a Life Lite . . . You may use it with the greatest safety, as it is clock controlled . . . easy and economical to operate . . . Rent one for \$8 to \$10 monthly . . . then, if you should desire to purchase it . . . the rental paid will be applied on the purchase price . . . For further information . . . or a free home demonstration write or phone Ultra-Violet Products Incorporated, 6158 Santa Monica Blvd., Los Angeles . . . Telephone Hollywood 31-71 for a free home demonstration (repeat)

[Stamped]: Received Sep. 6, 1939. Radio and Periodical Division.

[Endorsed]: No. 10218. United States Circuit Court of Appeals for the Ninth Circuit. Ultra-Violet Products, Inc., a corporation Petitioner, vs. Federal Trade Commission, Respondent. Transcript of the Record. Upon Petition to Review and Set Aside Order of the Federal Trade Commission.

Filed June 1, 1943

PAUL P. O'BRIEN

Clerk of the United States Circuit Court of Appeals
for the Ninth Circuit.

In the United States Circuit Court of Appeals for
the Ninth Circuit

No. 10218

ULTRA-VIOLET PRODUCTS, INC., a corpora-
tion,

Petitioner,

vs.

FEDERAL TRADE COMMISSION,

Respondent.

PETITION TO REVIEW AND SET ASIDE
ORDER OF FEDERAL TRADE COMMIS-
SION

To the Honorable Judges of the United States Cir-
cuit Court of Appeals for the Ninth Circuit:

Your Petitioner, Ultra-Violet Products, Inc., a
corporation, respectfully shows:

I.

Petitioner is now, and at all times hereinafter mentioned was a corporation duly created, organized and existing under and by virtue of the laws of the State of California, with its principal place of business in the City of Los Angeles, County of Los Angeles, State of California, and therein carries on the business of manufacturing and selling lamps which emit ultra-violet rays for therapeutic and other purposes.

II.

On the 7th day of December, 1940, Respondent Commission issued a complaint against Petitioner, alleging in substance, that Petitioner had disseminated by the United States mails and other means in commerce certain false advertisements for the purpose of inducing and which were likely to induce the purchase of one of Petitioner's products called "Life Lite", and had disseminated false advertisements for the purpose of inducing and which were likely to induce, directly or indirectly, the purchase in commerce of said product, in violation of section 12 of the Federal Trade Commission Act (Title 15, section 52, U.S.C. 1940 ed.), and that said advertisements constituted unfair and deceptive acts and practices in commerce in violation of section 5 of said Federal Trade Commission Act (Title 15, section 45, U.S.C. 1940 ed) which said complaint was given Docket No. 4407.

III.

Thereafter Petitioner duly filed its written answer

to said complaint denying that the advertisements disseminated by Petitioner were false, admitting or denying other material allegations of said complaint, and alleging facts deemed by Petitioner material to the subject-matter of said complaint.

IV.

Thereafter a hearing was held before a trial examiner designated by Respondent Commission, and certain further proceedings were had, whereupon Respondent Commission took said matter under submission.

V.

Thereafter Respondent Commission caused to be served upon Petitioner, on the 13th day of June, 1942, an instrument in writing, dated June 8, 1942, designated "Findings As to the Facts and Conclusion", in said Docket No. 4407, a copy of which said instrument is hereunto annexed, marked "Exhibit A", and hereof made a part, and caused to be served upon Petitioner at the same time an instrument in writing, dated June 8, 1942, designated "Order to Cease and Desist", in said Docket No. 4407, a copy which last-mentioned instrument is hereunto annexed, marked "Exhibit B", and hereof made a part.

VI.

The findings as to the facts, set forth in said "Exhibit A", and in particular the findings contained in paragraphs numbered Six, Seven and Nine thereof, are without substantial support in the evidence received by Respondent Commission

and its trial examiner in the proceedings aforesaid, but are contrary to such evidence, and are arbitrary, capricious and unlawful; the "Conclusion", set forth in said "Exhibit A", is not supported by the findings or by the evidence; the "Order to Cease and Desist", "Exhibit B" aforesaid, and in particular subparagraphs (a), (b), (c), (d), (f), (g), (h), (i), (j), and (n) of paragraph 1, and paragraph 3 thereof, are not supported by the record before Respondent Commission in said proceedings and are beyond the authority and jurisdiction of Respondent Commission.

Wherefore your Petitioner prays that this Honorable Court review the proceedings aforesaid, and set aside the aforesaid "Order to Cease and Desist", or modify the same in such respects as to the Court may seem proper and consonant with law.

HENRY McCLERNAN

Attorney for Petitioner

State of California

County of Los Angeles—ss.

Thomas S. Warren, being first duly sworn, deposes and says: that he is the President of Ultra-Violet Products, Inc., the Petitioner in the above-entitled action; that he has read the foregoing Petition, and knows the contents thereof; and that the same is true of his own knowledge, except as to matters which are therein stated upon information and belief, and as to those matters he believes it to be true.

THOMAS S. WARREN

Subscribed and sworn to before me this 10th day of August, 1942.

[Seal] HELEN BURLAND

Notary Public in and for the County of Los Angeles,
State of California.

My Commission Expires March 21, 1943.

[Endorsed]: Filed Aug 11, 1942

[Title of Circuit Court of Appeals and Cause.]

CONCISE STATEMENT OF POINTS ON
WHICH PETITIONER INTENDS TO
RELY AND DESIGNATION OF PARTS
OF THE RECORD WHICH IT THINKS
NECESSARY FOR THE CONSIDERATION
THEREOF

To the Clerk of the above-entitled Court and to
Respondent, Federal Trade Commission:

The following is a concise statement of the points
on which the Petitioner, Ultra-Violet Products,
Inc., intends to rely, on the review, and designation
by the Petitioner of the parts of the record which
it thinks necessary for the consideration thereof,
to-wit:

Concise Statement of Points on Which Petitioner
Intends to Rely

(For convenience, the Respondent, Federal Trade
Commission, is hereinafter designated "Commis-
sion"; the "Findings as to the Facts" made by the

Commission on June 8, 1942, and copy of which is contained in "Exhibit A" attached to the Petition on file herein, are hereinafter designated "Findings"; the "Order to Cease and Desist" issued by the Commission on June 8, 1942 and copy of which is attached, as "Exhibit B", to the Petition on file herein, is hereinafter designated "Order".)

1. The following portion of the Findings of the Commission, to-wit:

The benefits afforded by respondent's lamp to the skin and to the general health cannot properly be compared with those afforded by natural sunlight because of the wide variation between the rays emanating from the two sources,

was without substantial support in the evidence received by the Commission but was contrary to such evidence and was arbitrary, capricious and unlawful; the "Conclusion" reached by the Commission and contained in its Findings at the end thereof was beyond the jurisdiction of the Commission and unlawful insofar as it depended upon the said portion of the Findings; the Order of the Commission that Petitioner cease and desist from disseminating or causing to be disseminated any advertisement which represents that Petitioner's therapeutic lamp known as "Life Lite"

affords benefits to the skin or to the general health of the user comparable to those afforded by natural sunlight

was not supported by the record before the Com-

mission and was beyond the authority and jurisdiction of the Commission.

2. The following portion of the Findings of the Commission, to-wit:

While ultra-violet rays of the wave length emitted by [Petitioner's] lamp possess bactericidal properties, such properties are effective only in those cases where the infection sought to be attacked is limited to the surface of the skin. The rays are incapable of penetrating the surface of the skin and destroying bacteria or fungi present below the surface. The use of [Petitioner's] lamp therefore does not constitute a cure or remedy or a competent or adequate treatment for such conditions as * * * ringworm, athlete's foot, acne, eczema, psoriasis * * *, all of which are due to causes existing below the surface of the skin,

was without substantial support in the evidence received by the Commission but was contrary to such evidence and was arbitrary, capricious and unlawful; the "Conclusion" reached by the Commission and contained in its Findings at the end thereof was beyond the jurisdiction of the Commission and unlawful insofar as it depended upon the said portion of the Findings; the Order of the Commission that Petitioner cease and desist from disseminating or causing to be disseminated any advertisement which represents

that said lamp constitutes a cure or remedy or a competent or adequate treatment for * * *

ringworm, athlete's foot, acne, eczema (or)
psoriasis * * *

was not supported by the record before the Commission and was beyond the authority and jurisdiction of the Commission.

3. The following portion of the Findings of the Commission, to-wit:

In the case of sores and ulcers, the lamp may possibly stimulate the healing process but only in those instances in which the infection causing the condition is confined to the surface of the skin,

was without substantial support in the evidence received by the Commission but was contrary to such evidence and was arbitrary, capricious and unlawful; the "Conclusion" reached by the Commission and contained in its Findings at the end thereof was beyond the jurisdiction of the Commission and unlawful insofar as it depended upon the said portion of the Findings; the Order of the Commission that Petitioner cease and desist from disseminating or causing to be disseminated any advertisement which represents

that said lamp constitutes a cure or remedy for sores or ulcers, or that it constitutes a competent treatment therefor except insofar as it may stimulate the healing process in those cases in which the infection causing such conditions is confined to the surface of the skin

was not supported by the record before the Com-

mission and was beyond the authority and jurisdiction of the Commission.

4. The following portion of the Findings of the Commission, to-wit:

The lamp possesses no therapeutic value in the treatment of * * * bronchitis, * * *

was without substantial support in the evidence received by the Commission but was contrary to such evidence and was arbitrary, capricious and unlawful; the "Conclusion" reached by the Commission and contained in its Findings at the end thereof was beyond the jurisdiction of the Commission and unlawful insofar as it depended upon the said portion of the Findings; the Order of the Commission that Petitioner cease and desist from disseminating or causing to be disseminated any advertisement which represents

that said lamp possesses any therapeutic value in the treatment of * * * bronchitis * * *

was not supported by the record before the Commission and was beyond the authority and jurisdiction of the Commission.

5. The following portion of the Findings of the Commission, to-wit:

It is incapable of building up in the body resistance to disease,

was without substantial support in the evidence received by the Commission but was contrary to such evidence and was arbitrary, capricious and unlawful; the "Conclusion" reached by the Commission and contained in its Findings at the end

thereof was beyond the jurisdiction of the Commission and unlawful insofar as it depended upon the said portion of the Findings; the Order of the Commission that Petitioner cease and desist from disseminating or causing to be disseminated any advertisement which represents

that said lamp builds up in the body resistance to disease

was not supported by the record before the Commission and was beyond the authority and jurisdiction of the Commission.

6. The following portion of the Findings of the Commission, to-wit:

It does not produce any chemical reaction with respect to the blood stream * * *

was without substantial support in the evidence received by the Commission but was contrary to such evidence and was arbitrary, capricious and unlawful; the "Conclusion" reached by the Commission and contained in its Findings at the end thereof was beyond the jurisdiction of the Commission and unlawful insofar as it depended upon the said portion of the Findings; the Order of the Commission that Petitioner cease and desist from disseminating or causing to be disseminated any advertisement which represents

that said lamp * * * produces any chemical reaction with respect to the blood stream * * *

was not supported by the record before the Commission and was beyond the authority and jurisdiction of the Commission.

7. The following portion of the Findings of the Commission, to-wit:

It is incapable of building up the body's resistance to infection, * * *

was without substantial support in the evidence received by the Commission but was contrary to such evidence and was arbitrary, capricious and unlawful; the "Conclusion" reached by the Commission and contained in its Findings at the end thereof was beyond the jurisdiction of the Commission and unlawful insofar as it depended upon the said portion of the Findings; the Order of the Commission that Petitioner cease and desist from disseminating or causing to be disseminated any advertisement which represents

that said lamp builds up the resistance of the body to infection * * *

was not supported by the record before the Commission and was beyond the authority and jurisdiction of the Commission.

8. The following portion of the Findings of the Commission, to-wit:

Aside from its irritating effect, the lamp affords no stimulation to the tissues of the skin,

was without substantial support in the evidence received by the Commission but was contrary to such evidence and was arbitrary, capricious and unlawful; the "Conclusion" reached by the Commission and contained in its Findings at the end thereof was beyond the jurisdiction of the Com-

mission and unlawful insofar as it depended upon the said portion of the Findings; the Order of the Commission that Petitioner cease and desist rfrom disseminating or causing to be disseminated any advertisement which represents

that said lamp affords any stimulation to the tissues of the skin in excess of such stimulation as may result from its irritating effect

was not supported by the record before the Commission and was beyond the authority and jurisdiction of the Commission.

9. The Order of the Commission that Petitioner cease and desist from disseminating or causing to be disseminated any advertisement which represents

that said lamp normalizes the chemistry of the body, improves metabolism, or builds new tissues, except insofar as its use may result in the production of Vitamin D

was not supported by the record before the Commission and was beyond the authority and jurisdiction of the Commission.

10. Paragraph numbered "3" of the Order of the Commission, insofar as it was based upon or depends upon the portions of the Findings and Order of the Commission hereinabove quoted, was not supported by the record before the Commission and was beyond the authority and jurisdiction of the Commission.

Designation of Parts of the Record Necessary for
The Consideration of The Foregoing Points
Petitioner designates the following parts of the

certified transcript of the record filed by Respondent as necessary for the consideration of the foregoing points (since the pages of said transcript are not numbered consecutively, page numbers relating to the Complaint, Answer, Findings, Order and Exhibits 2 and 3 refer to numbers which, judging from the appearance of the photostatic negatives of said documents in the transcript, were placed on said documents with a numbering machine; page numbers relating to the short-hand reporter's "Official Report of Proceedings Before the Federal Trade Commission", included in said transcript, refer to what appear to be the reporter's page numbers):

1. Complaint (R. 1-9, incl.).
2. Answer to Complaint (R. 10-52, incl.).
3. Findings as to the Facts (R. 115-127, incl.).
4. Order to Cease and Desist (R. 128-131, incl.).
5. Portions of the reporter's transcript entitled "Official Report of Proceedings Before the Federal Trade Commission", as follows:

From		To	
Page	Line	Page	Line
2	1	2	12 Inclusive
3	1	3	end "
5	18	5	23 "
6	7	6	15 "
54	10	54	15 "
56	2	56	8 "
57	20	57	end "
61	18	63	17 "

From		To	
Page	Line	Page	Line
63	22	66	6 Inclusive
66	13	67	5 “
67	22	73	20 “
78	22	95	19 “
97	7	97	10 “
98	4	102	1 “
104	7	108	4 “
108	25	109	15 “
110	7	113	5 “
114	11	118	4 “
120	14	123	15 “
125	7	125	end “
128	16	130	4 “
141	2	141	2 “
145	2	145	24 “
149	23	149	23 “
151	9	151	11 “
165	13	170	11 “
170	21	175	end “
180	11	180	16 “
181	15	182	8 “
184	12	184	13 “
185	2	185	4 “
185	11	187	24 “
188	12	188	21 “
189	15	192	6 “
193	2	193	3 “
193	15	194	12 “
194	19	195	2 “
198	20	209	9 “

From		To	
Page	Line	Page	Line
211	22	224	21 Inclusive
227	1	228	2 “
228	21	237	11 “
238	17	242	19 “
244	8	281	end “
283	2	288	end “
349	12	354	4 “
355	2	355	3 “
355	11	369	11 “
373	5	373	12
374	10	375	15 “
379	17	382	8 “
382	23	385	7 “
388	9	394	6 “
394	16	398	2 “
399	14	399	24 “
401	20	401	24 “
402	12	403	7 “
403	24	410	14 “
410	23	414	7 “
415	8	456	18 “
457	15	457	end “
458	19	462	9 “
463	25	465	16 “
469	18	474	5 “
486	11	488	12 “
488	25	490	1 “
490	4	499	20 “
503	1	504	7 “
505	8	510	9 “

From		To	
Page	Line	Page	Line
510	22	515	15 Inclusive
519	9	519	10 “
519	22	520	1 “
521	4	521	8 “
521	16	527	11 “
528	18	531	3 “
540	22	542	6 “
545	1	545	4 “
546	4	546	23 “
550	2	550	17 “
554	23	554	24 “

6. “Respondent’s Exhibit 1 A-L” which, according to an unnumbered page appearing in said transcript between pages 106 and 107 thereof, is a book entitled “Report by Roger W. Truesdail, Ph.D.—The Cure of Rickets in Rats Exposed to the Radiations of the Life Lite Lamp” and filed separately from said transcript.

7. Respondent’s Exhibit 2 (R. 107)

8. Respondent’s Exhibit 3 (R. 108).

Dated this 19th day of June, 1943.

HENRY McCLERNAN

Attorney for Petitioner.

Copy mailed to Respondent June 19, 1943.

[Endorsed]: Filed June 23, 1943.

[Title of Circuit Court of Appeals and Cause.]

NOTICE

To:

Henry McClernan, Esq.,
2700 Hollister Terrace,
Glendale, California.

Dear Sir:

Please Take Notice that I am today forwarding to Paul P. O'Brien, Esq., Clerk of the United States Circuit Court of Appeals, at his office in the United States Court House, San Francisco, California, the respondent's designation of portions of the record in this cause (in addition to those previously designated by the petitioner herein) to be printed for consideration by this Court, (copy appended hereto).

JOSEPH J. SMITH, JR.

Assistant Chief Counsel
Federal Trade Commission

Washington, D. C.,
July 26, 1943.

Receipt of copy of the above notice and draft of respondent's designation of portions of the record to be printed, is hereby acknowledged this day of 1943.

.....
Attorney for the Petitioner

[Title of Circuit Court of Appeals and Cause.]

RESPONDENT'S DESIGNATION OF PORTIONS OF RECORD TO BE PRINTED

Respondent, Federal Trade Commission, respectfully requests Paul P. O'Brien, Esq., Clerk of the United States Circuit Court of Appeals for the Ninth Circuit, to print as the record for review in this cause, in addition to the petitioner's designation of portions of the record to be printed, the following:

(1) Typewritten transcript of testimony:

From		To	
Page	Line	Page	Line
118	5	119	5 both incl.
126	1	128	15 "
134	21	137	6 "
149	24	151	8 "
170	12	170	20 "
178	17	180	10 "
182	9	183	1 "
187	25	188	11 "
192	16	193	1 "
193	4	193	14 "
301	16	303	19 "
304	4	306	15 "
456	24	457	14 "
458	1	458	18 "
483	16	486	9 "
499	21	502	13 "
502	21	502	25 "
504	8	505	6 "
546	24	547	2 "

(2) Exhibits:

Com. Ex. 1, 2, 10, 11, 13-B, 15, 16, 17, 21.

JOSEPH J. SMITH, JR.

Assistant Chief Counsel

Federal Trade Commission

Washington, D. C.,

July 26, 1943.

[Endorsed]: Filed July 30, 1943

